SANTA CLARA VALLEY WATER DISTRICT

WATER UTILITY COST OF SERVICE ANALYSIS

HILTON FARNKOPF & HOBSON, LLC

May 2001

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FINAL REPORT

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SANTA CLARA VALLEY WATER DISTRICT

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May 25, 2001

Mr. John Ryan
Special Projects Engineer
Operations Organization
Santa Clara Valley Water District
5750 Almaden Expressway
San José, CA 95118-3686

Subject: **Water Utility Cost of Service Analysis**
Final Report

Dear Mr. Ryan:

Hilton Farnkopf & Hobson, LLC is pleased to submit this final report for the Water Utility Cost of Service Analysis. It has been a privilege assisting the District with the preparation of its first cost of service study.

The report indicates that the District's rate-making practice of pooling costs has a balanced effect in setting rates for its diverse customer base. The report also indicates that, although further refinements should be considered, the District compares well with its peer wholesale water supply agencies.

Very truly yours,

HILTON FARNKOPF & HOBSON, LLC

John W Farnkopf

John W. Farnkopf, P.E.
Senior Vice President

TABLE OF CONTENTS

SECTION 1. EXECUTIVE SUMMARY 1-1

1-1. INTRODUCTION 1-2
    1-1.1. Scope and Purpose 1-2
    1-1.2. Background 1-3

1-2. COST OF SERVICE ANALYSIS 1-3
    1-2.1. Analytical Approach 1-4
    1-2.2. Findings 1-5
        1-2.2.1. Cost Allocations
        1-2.2.2. Unit Costs of Services

1-3. ALTERNATIVE COST OF SERVICE APPROACHES 1-7
    1-3.1. Basis for Comparison 1-7
    1-3.2. Findings 1-8

1-4. DATA MANAGEMENT IMPROVEMENTS 1-9
    1-4.1. Background 1-9
    1-4.2. Findings 1-9

1-5. CONCLUSION 1-10

SECTION 2. COST OF SERVICE ANALYSIS 2-1

2-1. INTRODUCTION 2-2
    2-1.1. Scope and Purpose 2-2
    2-1.2. Cost of Service Analysis 2-2
    2-1.3. Cost Allocation Model 2-3

2-2. COST ALLOCATION APPROACH 2-4
    2-2.1. Cost Structure 2-4
    2-2.2. Services 2-6
    2-2.3. Allocation Factors 2-6
        2-2.3.1. Direct Allocations
            2-2.3.1.1. Allocations Related to the Type of Service
            2-2.3.1.2. Allocations Related to Each Zone
            2-2.3.1.3. Allocations Related to Imported Water Purchases
        2-2.3.2. Indirect Allocations
        2-2.3.3. Allocating Operating and Capital Costs

2-3. COST OF SERVICE MODELS 2-10
  2-3.1. Unpooled Cost Model 2-11
  2-3.2. Pooled Cost Model 2-11
  2-3.3. Cost Allocation Summary 2-12

2-4. COST OF SERVICE FINDINGS 2-14
  2-4.1. Comparison of Revenue Requirements with Revenues 2-14
    2-4.1.1. Unpooled Cost Model
    2-4.1.2. Pooled Cost Model
  2-4.2. Comparison of Unit Costs with Existing Rates 2-17
    2-4.2.1. Unpooled Cost Model
    2-4.2.2. Pooled Cost Model
  2-4.3. Summary of Cost of Service Allocations 2-18

2-5. ISSUES FOR FUTURE EVALUATION 2-19

SECTION 3. ALTERNATIVE COST OF SERVICE APPROACHES 3-1

3-1. INTRODUCTION 3-2
  3-1.1. Scope and Purpose 3-2
  3-1.2. Wholesale Water Agencies Surveyed 3-3

3-2. COST OF SERVICE APPROACHES 3-4
  3-2.1. Contra Costa Water District 3-4
    3-2.1.1. Cost of Service Objectives
    3-2.1.2. Rate Structure Strengths and Weaknesses
    3-2.1.3. Potential Rate Structure Changes
  3-2.2. Denver Board of Water 3-6
    3-2.2.1. Cost of Service Objectives
    3-2.2.2. Rate Structure Strengths and Weaknesses
  3-2.3. Greater Vancouver Water District 3-7
    3-2.3.1. Cost of Service Objectives
    3-2.3.2. Rate Structure Strengths and Weaknesses
    3-2.3.3. Potential Rate Structure Changes
  3-2.4. Municipal Water District of Orange County 3-8
    3-2.4.1. Objectives of Rate Structure
    3-2.4.2. Rate Structure Strengths and Weaknesses
    3-2.4.3. Potential Rate Structure Changes
  3-2.5. Metropolitan Water District of Southern California 3-9
    3-2.5.1. Cost of Service Objectives
      3-2.5.1.1. Strategic Planning Principles
      3-2.5.1.2. Composite Rate Structure Framework
      3-2.5.1.3. Additional Evaluation Criteria
    3-2.5.2. Rate Structure Strengths and Weaknesses
      3-2.5.2.1. Fixed Charges
      3-2.5.2.2. Variable Charges

- *3-2.5.3. Potential Rate Structure Changes*
  - *3-2.5.3.1. Fixed Charges*
  - *3-2.5.3.2. Variable Charges*

3-2.6. Orange County Water District 3-21
- *3-2.6.1. Cost of Service Objectives*
- *3-2.6.2. Rate Structure Strengths and Weaknesses*
- *3-2.6.3. Potential Rate Structure Changes*

3-2.7. Portland Bureau of Water Works 3-22
- *3-2.7.1. Cost of Service Objectives*
- *3-2.7.2. Rate Structure Strengths and Weaknesses*
- *3-2.7.3. Potential Rate Structure Changes*

3-2.8. San Diego County Water Authority 3-24
- *3-2.8.1. Cost of Service Objectives*
- *3-2.8.2. Rate Structure Strengths and Weaknesses*
- *3-2.8.3. Potential Rate Structure Changes*

3-2.9. San Francisco Public Utilities Commission 3-25
- *3-2.9.1. Cost of Service Objectives*
- *3-2.9.2. Rate Structure Strengths and Weaknesses*
- *3-2.9.3. Potential Rate Structure Changes*

3-2.10 Seattle Water Department 3-26
- *3-2.10.1. Cost of Service Objectives*
- *3-2.10.2. Rate Structure Strengths and Weaknesses*
- *3-2.10.3. Potential Rate Structure Changes*

3-2.11 Southern Nevada Water Authority 3-27
- *3-2.11.1. Cost of Service Objectives*
- *3-2.11.2. Rate Structure Strengths and Weaknesses*
- *3-2.11.3. Potential Rate Structure Changes*

3-2.12. Zone 7 Water Agency 3-28
- *3-2.12.1. Cost of Service Objectives*
- *3-2.12.2. Rate Structure Strengths and Weaknesses*
- *3-2.12.3. Potential Rate Structure Changes*

3-3. EVALUATION OF APPROACHES 3-29

3-3.1. Rate Structure Summary 3-29

3-3.2. Structural Elements and the Cost of Service 3-30
- *3-3.2.1. Fixed Charges*
- *3-3.2.2. Variable Charges*
- *3-3.2.3. Agencies with Variable Charges Only*
- *3-3.2.4. Agencies with Fixed and Variable Charges*

3-4. COMPARISON WITH OTHER AGENCIES 3-37

3-4.1. Comparison of SCVWD with Other Agencies Surveyed 3-37

SECTION 4. DATA MANAGEMENT IMPROVEMENTS 4-1

4.1. INTRODUCTION 4-2
4-1.1. Scope and Purpose 4-2
4-1.2. Basis for Evaluation 4-2

4.2. CURRENT DATA MANAGEMENT PRACTICES 4-2
4-2.1. Data Requirements for Cost of Service Modeling 4-2
4-2.1.1. Financial Reports
4-2.1.2. Operations Reports
4.2.2. Comparison with Other Agencies 4-5

4-3. POTENTIAL REFINEMENTS 4-7
4-3.1. Alternative Rates and Charges for Cost Recovery 4-7
4-3.1.1. Structural Changes
4-3.1.2. Managing Data for Future Rates

APPENDIX – COST OF SERVICE MODEL

LIST OF TABLES AND FIGURES

Table 1-1 – Cost Allocation Comparison 1-6
Table 1-2 – Unit Costs of Services ($/AF) 1-7

Table 2-1 – Summary of Direct Allocation Factors 2-8
Table 2-2 – Summary of Revenue Requirement Allocations 2-13
Table 2-3 – Comparison of Revenue Requirements with Existing Rate Revenue 2-15
Table 2-4 – Comparison of Unit Costs with Existing Rates 2-17

Table 3-1 – Agency Contacts 3-3
Table 3-2 – Agency General Information 3-4
Table 3-3 – MWDSC Water Sales from Current Charges 3-16
Table 3-4 – MWDSC Proposed Rate Structure 3-19
Figure 3-1 – Conversion from Current to Proposed MWDSC Rate Structures 3-20
Table 3-5 – Summary of Wholesale Rates 3-30
Table 3-6 – Summary of Wholesale Rate Structure Elements 3-32

Figure 4-1 – Data Input Sources 4-3

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Darya Miller, Production Coordinator

SECTION 1. EXECUTIVE SUMMARY

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1.1. INTRODUCTION

1-1.1. Scope and Purpose

In the *Water Utility Performance Audit* completed in April 2000, a recommendation was made for the District to conduct a comprehensive cost of service study. The District's Board of Directors identified this project as a critical and important assessment. The goal of this project is to update the District's methods for determining the cost of providing service to each of its customer classes. As part of the project, other agencies' cost of service practices were compared with the District and recommendations were made for improving the District's management of data required to determine the cost of service.

The purpose of the project is to provide the District with a model for relating costs to each of the District's customer classes. This information will be useful in evaluating and improving its rate-setting practices in the future. The results of the cost of service analysis will allow the District to compare its rates, which reflect Board policy, with unit costs of service, which are derived from the consistent application of cost allocation formulae, which do not reflect Board policy. As part of the project, other agencies' cost of service practices were compared with the District . The information gained about other agencies' approaches to following cost of service principles in setting their rates indicates where the industry trends are heading, some of which be relevant to the District. Finally, recommendations were made for improving the District's management of data required to determine the cost of service. The information concerning improvements in data management augments findings in the District's *Performance Audit*, by focusing on the needs of rate setting.

The District contracted with Hilton Farnkopf & Hobson, LLC to conduct this project under Agreement No. A2370, dated September 19, 2000. The project was performed as a series of three technical memoranda, which were converted into the sections and Appendix of the present report. This Executive Summary briefly summarizes the findings from Sections 2, 3, and 4.

1-1.2. Background

The *Performance Audit* (Section 5, pages 11 and 12) recommended that the District have an independent professional services firm perform a comprehensive cost of service study. It was also recommended that the District "apply the findings of the cost of service study to its current user rate methodology, making adjustments as necessary." This second recommendation was conditioned by the observation that "Many utilities use cost of service studies primarily or background information, treating rate setting as a policy exercise." These two recommendations stemmed from several specific observations in the *Performance Audit*:

- The cost of service information used to develop rates may be outdated, especially for north and south County customers.
- The cost of service derivation may require additional support.
- Subsidies between customer classes may exist.
- Agricultural water pricing may be "unfair".

The general import of the *Performance Audit's* recommendations was that the District should review its cost of service and rate setting practices to bring them up to date and eliminate inequities, if any. The present cost of service analysis addresses the first recommendation and provides additional information about the rate setting at other wholesale water agencies.

1-2. COST OF SERVICE ANALYSIS

The District sets its rates to recover costs from its M&I and agricultural customers located in its two zones. The District develops its revenue requirements and rates using a financial planning model. The model identifies and allocates its operating and capital costs based on appropriate measures, factoring in policies established by the Board and provisions of the District Act. There are two key factors in particular that influence the District's cost of service analysis.

- Because the District's groundwater and surface water resources are operated conjunctively, the majority of costs should be pooled.
- Agricultural rates will be limited to no more than 25% of non-agricultural rates by the District Act. Recent Board policy established an agricultural limit of 10% of non-agricultural rates.

The District's rate setting must satisfy these two conditions in developing cost-based rates. In the cost of service analysis in the present report, different models were prepared to study the effects of pooling. It is important to recognize that these models do not make any adjustments for the 25% limit on agricultural rates, however.

1-2.1. Analytical Approach

As the name implies, a cost of service analysis determines how much it costs to provide services. The analysis involves allocating costs to services in a mechanistic fashion. If an agency's policy is to establish rates based on the cost of providing service, then the rate schedule reflects the unit costs of service. Rates are the charges that are designed to generate the revenue to recover the costs.

An agency's rate design often implements policies in addition to cost recovery. Conservation or increasing block rates are one example. Water and electric power rates often implement elements of social policy through lifeline rates to provide affordable services to all income strata.

Six steps were followed to develop a cost of service model for the District:

- **Financial data.** List all of the costs that must be covered by the Water Enterprise's sources of available revenue. This analysis used budget information at the job-number level;
- **Services.** Identify the types of service provided. The District's services are differentiated by the specific water charges that are collected depending on the type of water, the customer (agricultural or Municipal and Industrial), and the area or zone;
- **Allocation factors.** Derive the allocation factors that will correlate the cost elements with one or more types of service;
- **Cost allocations.** Allocate each cost among types of services using the corresponding allocation factor;
- **Costs of services.** Total all costs associated with each service to determine the total cost of service for each service; and
- **Unit costs of services.** Divide the cost for each service by the corresponding units of service to determine the unit cost of service.

Two versions of the cost of service model were produced: the unpooled cost model and the pooled cost model. Both models rely on the same allocation factors, but differ in how the allocated costs are aggregated.

The first model, unpooled cost model, applied allocation factors to each cost. The resulting allocations were totaled to determine the unit costs for each service (i.e., groundwater, untreated surface water, treated water, and recycled water for M&I and agricultural customers in Zones W-2 and W-5).

In the unpooled cost model, each allocation factor allocated costs in proportion to flow or related measures to each service as though they were distinct, unrelated services. Because of the District's conjunctive use management of its water supplies, there are relationships between groundwater and treated water services that are not captured by certain of the cost allocation factors when they are applied individually.

In the second model, the pooled cost model, allocations that were related to interdependent functions were aggregated or pooled. The pooled cost model segregated other costs that are specifically attributable to individual services. The result is that the pooled cost model calculated a pooled cost for interdependent functions and a specific cost for functions distinct to each of the District's services.

1-2.2. Findings

The cost of service analysis resulted in two cost allocations for comparison with the District's existing cost recovery pattern (based on how much revenue is paid by customers) and the District's existing rates. The differences tend to be large in most cases in either dollar amounts, percentages, or both.

1-2.2.1. Cost Allocations

Table 1-1 compares the cost allocations with the revenue received under the District's existing rates. The table shows the dollar amounts as percentages of the total. For example, 41.74% of the District's revenue from existing rates is paid for groundwater by M&I customers in Zone 2. The percentages for the unpooled and pooled allocations show the shift in dollars, as a percent of the total. For example, where 41.74% of existing rate revenue is paid for Zone 2 groundwater by M&I customers, only 30.17% is paid in the unpooled cost model.

The largest amounts of dollars are associated with groundwater and treated water, which is also where the greatest swings in percentages occur. **Table 1-1** yields two key findings:

Table 1-1
Cost Allocation Comparison

	Allocated Cost as a Percent of Total		
Service	**Existing Rates**	**Unpooled Cost Model**	**Pooled Cost Model**
1. Groundwater			
Zone W-2			
M&I	41.74%	30.17%	33.33%
Ag	0.09%	0.45%	0.71%
Zone W-5			
M&I	2.91%	4.88%	6.43%
Ag	0.40%	5.77%	8.77%
Subtotal	45.14%	41.27%	49.25%
2. Surface Water			
Zone W-2			
M&I	0.19%	0.17%	0.15%
Ag	0.02%	0.10%	0.15%
Zone W-5			
M&I	0.02%	0.04%	0.04%
Ag	0.01%	0.16%	0.16%
Subtotal	0.24%	0.47%	0.50%
3. Treated Water			
Contract	49.85%	52.21%	45.05%
Non-contract	4.64%	5.95%	5.14%
Subtotal	54.49%	58.16%	50.18%
4. Recycled Water			
Zone W-5			
M&I	0.00%	0.00%	0.00%
Ag	0.13%	0.09%	0.07%
Subtotal	0.13%	0.09%	0.07%
Total	100.00%	100.00%	100.00%

- The unpooled and pooled cost allocations yield the opposite effect in how they allocate costs to groundwater and treated water compared with existing revenue. The unpooled cost model allocates less to groundwater and more to treated water. The pooled cost model has the reverse effect.
- The revenue from existing groundwater and treated water rates falls midway between the unpooled and pooled cost models.

The District's rate setting results in an allocation of costs that falls between one model in which no costs are pooled and the other model in which costs are pooled.

1.2.2.2. *Unit Costs of Services*

The net effect of the allocation differences is shown in **Table 1-2**, which shows the unit costs for groundwater and treated water.

Table 1-2
Unit Costs of Services ($/AF)

	Groundwater				Treated Water (Contract)
	Zone 2		Zone 5		
	M&I	Agriculture	M&I	Agriculture	
Existing Rates	$310	$31	$115	$11.50	$380
Pooled Cost Model	$248	$248	$254	$254	$343
Unpooled Cost Model	$224	$158	$192	$167	$398

With respect to groundwater unit costs, the existing agricultural rates are simply one-tenth of the M&I rates within each zone. In the pooled model, the M&I and agricultural rates are the same by zone, which is to say that the pooling in the pooled cost model does not recognize differences between M&I and agricultural uses. The consequence of the agricultural rate cap is a range in costs between M&I and agriculture in each zone that is much greater than the range in the unpooled cost model, which recognizes differences within each zone.

The treated water unit costs are not as varied as the groundwater unit costs between the three models because the treated water rates apply only to non-agricultural water.

1-3. ALTERNATIVE COST OF SERVICE APPROACHES

1-3.1. Basis for Comparison

Twelve other agencies supplying water to wholesale purchasers were surveyed to determine their approaches to cost of service analysis. Overall, the agencies surveyed represent a wide-ranging group from which to draw industry trends and to serve as a basis for comparison with the District, which shares some common elements, but which also has its own unique qualities. Like several of the agencies surveyed, the District provides service to M&I and agricultural customers, although the District serves a larger portion to agricultural customers than is commonly found. Some of the other agencies also provide both groundwater and surface water, although the relative proportion of groundwater is higher at the District than was found at other agencies.

In surveying these agencies, three questions were explored:

- What are the agency's cost of service objectives?
- What are the rate structure's strengths and weaknesses?
- What potential changes in the rate structure are being considered?

Part of the objective was to determine the extent to which other agencies depart from cost of service formula to accommodate special conditions and to reflect differences among customer classes.

1-3.2. Findings

There is a wide range of different approaches to setting rates in the survey sample.

- Some agencies have only volumetric charges, like the District. These agencies typify service areas in which discord among the member agencies is comparatively minimal.
- The majority of agencies have both fixed and volumetric charges. The fixed charges generate on average 15% of the rate revenue.
- The broad range of revenue generated by fixed charges (from virtually zero to as much as half the rate revenue) is indicative of the discretion agencies exercise in structuring their rates and how far in some cases they depart from pure cost allocation formulae.
- There appears to be growing interest in fixed charges that are correlated with capacity requirements.
- Some of the agencies that provide groundwater correlate levels of pumpage with their rate structures.
- Most of the agencies that provide agricultural water substantially discount the rates.

By comparison with these agencies, it is apparent that the District is unique because of its comparatively large agricultural customer class and its intensive conjunctive use of groundwater, local surface water, and imported water. None of the other agencies has a similar mix of circumstances. Nonetheless, the District's rates do not fall outside the norm. The District also has other constraints in setting agricultural rates and in managing its resources that combine cost of service analysis with policy to achieve rates that reflect not only the burden that customer classes place on the system, but the benefits associated with the service. Other agencies have also adjusted their rates to embrace considerations that pure cost allocation formulas miss.

1-4. DATA MANAGEMENT IMPROVEMENTS

1-4.1. Background

Cost of service analysis relies on detailed financial and operational data so that costs can be allocated to services. The District took advantage of this opportunity to request an evaluation of its cost of service data to determine any possible improvements in identifying the cost of water at all points of delivery. Part of the District's interest in improving data management stems from recommendations in the *Performance Audit* (Section 5, page 8 *et seq.*) concerning expense budgeting and water sales forecasts. In both cases, it was recognized that forecasts may include overly conservative contingencies to allow for forecasting imprecision. It was recommended that the District review "the interface between the water demand forecast and revenue forecasting functions" to establish explicit policies for these contingencies.

1-4.2. Findings

Although there is abundant accounting and regulatory precedent for maintaining cost recovery data in a standard format for water enterprises, there are also abundant unique practices encountered in the industry. However, at larger agencies, the standard is more commonly followed and the District is a good exemplar. The District maintains its budgets in award-winner style and had no difficultly producing operational data for developing cost allocations.

The District's record keeping and data management appears to serve its purposes for routine management functions and was readily usable for performing cost of service allocations. The District's chart of accounts follows the standard for utility accounting and its operational data on flows allows it to isolate reaches of the system for analysis. Although the present cost of service analysis did not determine point-to-point or wheeling costs, the District maintains the data that would allow it to do so.

The comments in the *Performance Audit* regarding overly conservative contingencies are well taken and valid. It is important to realize that the District's financial structure is self-regulating. Any revenue imbalance (i.e., surpluses resulting from high expense estimates and low water sales forecasts) is transferred to the District's capital reserve for future years. Continuous surpluses will accumulate in the capital reserve; however, the District is currently not in danger of retaining excessive reserves. Its capital improvement program is large enough to require debt financing. It is an important condition to monitor, but the consequences of overly conservative contingencies are benign transfers to the capital reserve.

1-5. CONCLUSION

A detailed cost of service analysis yielded results that were not unexpected, namely that the District's costs of providing its services are different from the rates it charges. The review of cost of service approaches used by other wholesale agencies indicated that the District's rates are not unusual among its peers. The review of the District's data management concluded that the District's practices attain a high standard and that some of the concerns in the *Performance Audit,* although well taken, are of little consequence.

The question might well be "So what?" To what purpose was this effort? From an outside, independent perspective, there are numerous benefits that have been produced, such as:

- The answer has been provided for how the costs of the District's services compare with its rates.
- The cost of service model is a valuable tool that provides a certain amount of detail, and could be developed further to evaluate point-to-point and wheeling costs, cost pooling, rate surcharges, etc.
- The survey indicates that other wholesale water agencies' rates contain features that may be worth the District's consideration.
- The District's policies have played a major role in setting its rates and the need for explicit policies and the nature of those policies is clearer.

Benefits like these lay to rest many issues that historically have been of interest. With this analysis, a backdrop exists for future rate-making deliberations over topics like the interrelationship between the District's and the SFPUC's rates, the use of rates as resource management devices, and rate structures that anticipate more liberal markets for water transfers.

The cost of service models are valuable tools in analyzing the relationship between the costs of the District's services and the rates paid for those services. The models indicate large disparities that are attributable to District policies that pool costs and recover them according to both tangible and intangible benefits that are not reflected in the cost allocation formulae. These disparities do not indicate that the District's rates are necessarily inequitable. Again, cost of service is different from how much is paid for the service. Any changes in the rates that are charged for the District's services should be evaluated based on the District's rate-making objectives, and not just on the results of the cost of service analysis.

SECTION 2. COST OF SERVICE ANALYSIS

SECTION 2. COST OF SERVICE ANALYSIS

2-1. INTRODUCTION

2-1.1. Scope and Purpose

As the major analytical task in this project, the scope requires preparation of a model in which the District's costs are assembled and allocated to determine the cost of each of its services. The purpose is to compare the unit cost of each service with each the District's current rates. It is not intended that this cost of service analysis will derive new rates.

2-1.2. Cost of Service Analysis

In general terms, cost of service analysis determines the cost of providing service through a systematic cost allocation structure. A cost of service analysis is often an intermediate step in a comprehensive rate study whereby revenue requirements are allocated according to the rates charged each customer class. Revenue requirements comprise total operating and capital expenses – in effect, the costs of operations – minus non-rate revenues (e.g., property taxes) and plus or minus transfers to reserves. The revenue requirement is the amount of revenue that rates are designed to generate.

The present cost of service analysis allocates the revenue requirements proportionately to each service, which is similar to the District's volumetric rate structure. In other words, operating and capital costs, sources of non-rate revenue, and transfers to reserves have been allocated in the cost of service analysis.

Any costs[1] that can be directly allocated to a service are allocated first. Costs for which there is no direct relationship with a service are allocated indirectly based on a composite of the direct allocations. In order to follow this cost allocation process, costs and services must be identified and the relationship between the two must be established using representative measures of "cost causality" (i.e., the function that is associated with the cost). In the District's case, the Water Enterprise's costs are identified in its operating and capital budgets.[2] The District uses a system of cost centers for budgeting and accounting for costs that is "functional"; in other words, the cost centers correspond to the major functions performed by the facilities. This chart of accounts is very advantageous in allocating costs because cost allocation measures align well with these cost centers.

---

[1] For ease of discussion, "cost" is used to refer to any expense, revenue, or transfer that is allocated in this study.

The Water Enterprise's services are categorized by the different types of water it provides its customers, namely, groundwater, surface water, treated water, and recycled water. The cost of providing these services was analyzed according to the location in which it was provided (i.e., Zone W-2 or North County, and Zone W-5 or South County) and by the type of customer using the water (i.e., agricultural and non-agricultural).

2-1.3. Cost Allocation Model

The cost of service analysis consists of a spreadsheet model that performs the following operations:

- **Financial data.** List all of the costs that must be covered by the Water Enterprise's sources of available revenue. This included all direct and indirect operating and capital expenditures and other non-operating revenues and transfers to reserves that must be accounted in determining the District's revenue requirement. Projected financial data for FY 2000-01 were used.
- **Services.** Identify the type of service (i.e., type of water) associated with the District's costs. These services are groundwater, untreated surface water, treated water, and recycled water. Each service consists of volumes of water in each category of service to the District's M&I and agricultural customers located in the District's north and south zones.
- **Allocation factors.** Derive the percentage distributions among services that correspond to each allocation category. The allocation categories refer to the different categories of service provides to each of the District's customer classes located in the District's different zones. The allocation factors are primarily derived from volumes of each of the District's four services.
- **Cost allocations.** Allocate each cost to each service using the corresponding allocation factor. Using either volumes of water or other measures of benefit, costs were allocated proportionately to each service. No other allocation formulae were used other than flow-based allocations.

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[2] *1999-2001 Budget Addendum for Fiscal Year 2000-2001,* June 6, 2000.

- **Costs of services.** Total all costs associated with each service to determine the cost of service for each service. Two models were developed to determine the cost of each of the District's services: the unpooled cost model and the pooled cost model.
- **Unit costs of services.** Divide the cost of service for each service by the corresponding units of service to determine the unit cost of service. In the unpooled cost model, unit costs were derived for each service. In the pooled cost model, the unit cost is a combination of a base, pooled cost and a surcharge for each service.

In this cost of service analysis, two cost allocations were developed (the unpooled and pooled models). The two allocations demonstrate how alternative approaches to aggregating costs can affect the distribution of costs among the types of water service provided by the District. The first allocation model, the unpooled cost model, is a common cost allocation approach. The other cost allocation model, the pooled cost model, generally emulates the District's approach. The results of the two approaches are also compared to estimated revenue from each type of water service.

Determining the unit cost for each service culminates the cost of service analysis. The unit cost of service is different from a rate, which reflects District policy required to balance the diverse economic and other interests of its customers, policies to manage the use of the various water supplies, and legal requirements in the District's Act.

2-2. COST ALLOCATION APPROACH

The cost of service model allocates the District's operating and capital costs as shown in the District's current budget (FY 2000-01). Hence, the cost of service results are based on projected costs and customer demands, rather than on historical, actual costs and demands. In this way, the results of the cost of service model can be compared with the results of the District's rates, which are also based on a projection.

The level of detail in the model was predicated on the chart of accounts in the District's budgets and by the District's categories of services, each of which is described below. A copy of the model is included in the Appendix.

2-2.1. Cost Structure

The chart of accounts from the District's operating and capital budgets corresponds to the rows in the model.

A. Operating Expenses
    1. Source of Supply

   2. Raw Water Treatment & Distribution
   3. Water Treatment
   4. Treated Water Transmission & Distribution
   5. Administrative & General[3]

B. Capital Expenses
   1. Cash-funded Projects
   2. Debt-funded Projects

C. Other Revenues and Transfers to Reserves

The revenue requirement was developed by adding the operating and capital expenses, netting out the other revenues, adding transfers to reserves, and netting out transfers from reserves.

In modeling the cost allocations, some adjustments were made to the District's budgetary chart of accounts (e.g., debt service was combined with the other capital costs in the capital improvement program). These adjustments facilitated the calculation of composite allocation factors based on natural groups of costs. The District may find that other adjustments are warranted for cost accounting purposes (e.g., for tracking groundwater recharge costs). Adjustments of this type that improve cost allocations are not unusual in cost of service studies.

In arraying the District's operating and capital budgets for cost allocation purposes, we note two adjustments.

- **Debt service.** We included debt service for the recently issued $54,000,000 bond, which has a $1,475,000 interest payment in FY 2000-01. This debt was not included in the District's budget addendum for the current year.
- **Capital reserve transfer.** The District's budget addendum indicates a transfer to the capital reserve (referred to as "designated for future year's capital") of $13,633,000. Using this amount, the cost of service model computes a revenue requirement that is approximately $6,600,000 greater than the revenue derived from current rates. So that the model's unit costs are derived from a revenue requirement that equals the revenue generated by existing rates, we have reduced this transfer by about $6,600,000. With this adjustment, the revenue requirement equals the rate revenue at approximately $86,900,000.

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[3] The District's budget includes debt service in this cost center. For purposes of cost of service allocations, debt service was transferred from operating expenses to the capital projects section of the model so that all capital expenses were combined together.

With these two adjustments, the cost of service was calculated for a revenue requirement that equals the projected rate revenue.

2-2.2. Services

Services (i.e., groundwater, surface water, treated water, and recycled water) correspond to the columns in the model. With certain exceptions, each service is provided in the north (Zone W-2) and south (Zone W-5) portions of the District to M&I and agricultural customers.

- Groundwater – Used by both agricultural and M&I customers in both zones.
- Surface Water – Untreated water, which is in limited use by both types of customers in both zones.
- Treated Water – Available only in Zone W-2 to M&I customers (both contract and non-contract).
- Recycled Water – Available only in Zone W-5.

2-2.3. Allocation Factors

The allocation of costs to the District's services involved multiplying each cost by the appropriate allocation factors, which are described below. The allocation factors apply to operating and capital costs, as well as to other revenues and transfers to reserves. There are two major cost allocation categories, direct and indirect, which are described below.

2-2.3.1. *Direct Allocations*

Direct allocations apply where there is a clear relationship between a cost and a type of service, as represented by volumes of water. The services in the direct allocation category are those for which there are volumes of water used by customers that can serve as the basis for allocating costs to each of the services. For example, the costs of providing groundwater are allocated to customers in proportion to their respective groundwater use. The direct allocation categories are organized into three groups depending on whether the allocation is related to a specific service, zone, or imported water purchases.

2-2.3.1.1. *Allocations Related to the Type of Service*

Costs of this type are allocated among users in proportion to all users of the same type of service irrespective of zone.

G - Groundwater demands only; applies to costs specifically related to groundwater basin facilities and operations. Such costs are unrelated to system-wide operations or the supply of other types of water.

G-2 – Zone W-2 groundwater use only.

G-5 – Zone W-5 groundwater use only.

S - Surface water demands only; applies to costs specifically related to non-potable surface water storage facilities and operations. Such costs are unrelated to system-wide operations or the supply of other types of water.

T - Treated water demands only, including contract and non-contract water; applies to costs specifically related to treatment facilities and operations. Such costs are unrelated to system-wide operations or the supply of other types of water.

GST - Groundwater, surface water, and treated water demands; applies to costs that benefit all water users (excluding recycled water users). As such, this category reflects system-wide operations or costs that are not specifically related to a single type of water.

R – All recycled water demands only.

R-5 – Zone W-5 recycled water only.

2-2.3.1.2. *Allocations Related to Each Zone*

Costs of this type are allocated to users of all water within each zone irrespective of the type of water used.

Zone 2 - All demands in Zone W-2.

Zone 5 - All demands in Zone W-5.

2-2.3.1.3. *Allocations Related to Imported Water Purchases*

Costs of this type are allocated proportionately to each service.

SWP - State Water Project water purchases.

CVP - Central Valley Project water purchases (in terms of the imputed *cost* of CVP water associated with each service, rather than in terms of the *amount* of CVP water associated with each service). Water purchase cost was more appropriate because the CVP cost of water for agricultural water is different that for M&I water.

SWP+CVP – Combined State and Federal water purchases.

Projected FY 2000-01 flows were used for the allocation factors for both operating and capital expenses, as well as other revenue and transfers to reserves.

The model does not include direct allocations to customers for services that are specific to individual customer, such as field services or capital projects. It is the District's practice not to impose charges on individual customers for most administrative and field services.

Table 2-1 shows the values and resulting allocation percentages corresponding to each direct allocation factor. The percentages for each allocation factor are proportionate to the corresponding flows.

Table 2-1
Summary of Direct Allocation Factors

	Raw Water									Recycled Water	
	Groundwater				Surface Water				Treated Water		Total
Allocation Factor	Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-5	
	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I		
Table V.A. - Allocation Factors-Operating Expenditures											
2000-01 (AF)[3]	117,000	2,500	22,000	30,000	500	500	112	500	127,000	1,400	301,512
GST	38.99%	0.83%	7.33%	10.00%	0.17%	0.17%	0.04%	0.17%	42.32%		100.00%
R										100.00%	100.00%
R-5										100.00%	100.00%
G	68.22%	1.46%	12.83%	17.49%							100.00%
G-2	97.91%	2.09%									100.00%
G-5			42.31%	57.69%							100.00%
S					31.02%	31.02%	6.95%	31.02%			100.00%
T									100.00%		100.00%
Zone 2	47.27%	1.01%			0.20%	0.20%			51.31%		100.00%
Zone 5			40.73%	55.54%			0.21%	0.93%		2.59%	100.00%
SWP (AF)[1]	23,400	0							29,500		52,900
SWP	44.23%	0.00%							55.77%		100.00%
CVP (AF)[2]	13,600	186	4,798	6,539	332	12	112	1,196	68,741		95,516
SWP+CVP (AF)	37,000	186	4,798	6,539	332	12	112	1,196	98,241		148,416
SWP+CVP	24.93%	0.13%	3.23%	4.41%	0.22%	0.01%	0.08%	0.81%	66.19%		100.00%
CVP[4]	$ 2,044,270	$ 5,981	$ 704,018	$ 222,029	$ 52,174	$ 421	$ 14,190	$ 35,774	$ 8,954,120		$12,032,977
CVP	16.99%	0.05%	5.85%	1.85%	0.43%	0.00%	0.12%	0.30%	74.41%		100.00%

[1] Estimated.
[2] 1997-1999 Average deliveries provided by SCVWD.
[3] Source-SCVWD Rate Model.
[4] 1999 Cost provided by SCVWD.

We note that the values used in deriving the allocation factors are not the only values that could be used. For example, FY 2000-01 projected demands are used for allocation groundwater, surface water, treated water, and recycled water operating and capital costs. Demands for recent years, rather than projections, may be more representative and could be used. Alternatively, averages of several projected or historical years could be used. Combinations could also be used, with one set of values for operating costs and one for capital costs. We have assumed that FY 2000-01 projections are representative values that are suitable for present modeling purposes.

2-2.3.2. *Indirect Allocations*

Indirect allocations apply to costs that are not directly related to volumes of water. The indirect allocation category is used for costs for which there is no direct relationship between the cost and the service. For example, conservation program costs are allocated to customers based on composite allocation factors derived from their respective uses of all water supplies. The indirect costs are allocated on the basis of composites of other direct allocations within cost centers or of groups of cost centers. These are the indirect cost allocation categories.

Ind-SOS – Allocated based on the Source of Supply composite.

Ind-RWTD – Allocated based on the Raw Water Transmission & Distribution (T&D) composite.

Ind-T – Allocated based on the Water Treatment composite.

Ind-TWTD – Allocated based on the Treated Water T&D composite.

Ind-AG – Allocated based on a composite of Source of Supply, Raw Water T&D, Water Treatment, Treated Water T&D.

Ind-Op – Allocated based on a composite of all operating expenses.

Ind-Cap – Allocated based on a composite of all cash and debt funded capital projects.

Ind-All – Allocated based on a composite of all other operating and capital costs.

The indirect allocation category can be viewed as a transitional allocation. Costs included in the indirect category are allocated to the types of water using composite allocation factors. The composite allocation factors are based on the sum of the direct allocations.[4]

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[4] As an example, refer to the end of Table I.A. of the model in the Appendix, which shows the allocation of Source of Supply expenses. Of the total $41,425,543, $40,473,279 is allocated as direct and $952,264 is allocated as indirect. The indirect cost is allocated to each of the services based on the percentages of the direct allocations.

2-2.3.3. *Allocating Operating and Capital Costs*

It is important to develop allocation factors whose time frame is consistent with the costs being allocated. Operating costs are incurred within a relatively short time span compared with capital costs and tend to be fairly stable from year to year. Operating costs are therefore allocated using factors that correspond to the time span in which the cost was incurred, typically one year, which corresponds with the budget cycle.
Although capital costs are budget annually, their usefulness (i.e., service life) usually extends much longer. Hence, it is appropriate to weight the allocation of capital costs over a longer time frame in recognition of the fact that the allocations should not be based too heavily on a single year. Using a longer period of time also recognizes the multi-year benefits received by customers. In other words, lengthening the allocation basis is consistent with the longer lasting benefits provided by capital projects.

The approach to allocating capital costs in the model is an approach that develops a composite allocation factor that is weighted by the projects in the District's five-year capital improvement plan. The composite factor (Ind-Cap) was derived by allocating each of the projected projects by the appropriate allocation factor and summing the individual allocations. The composite allocation factor derived from the sum of the individual allocations for the five-year period was used to allocate the projected capital improvements for FY 2000-01.

There are two principal advantages to this approach. First, the allocation of capital costs that span more than one fiscal year will be similar because of the smoothing influence of the allocation procedure. Second, deriving composite allocation factors relies on readily available documentation that is updated annually.

Other methods can be used allocating capital improvements. For example, capital improvements can be allocated based on the ultimate use of the facility, rather than its ongoing use. This method is appropriate for facilities with long service lives, during which the use of the facility may shift materially from one class of customer to another. Rolling averages of demand can also be used. This method may be more appropriate for shorter-lived assets. The selection of the which method is most appropriate for the District is dependent on rate-making considerations. Based on the District's operations, there is no compelling need for more complicated refinements.

2-3. COST OF SERVICE MODELS

The cost allocation model allocates all costs either directly or indirectly to all services. We refer to this as the "unpooled" cost of service model. The unpooled cost of service model derives unit costs for each service. A second model is derived from the unpooled model by aggregating certain related costs.[5] We refer to this second model as the "pooled" cost of service model. Each model is described below.

2-3.1. Unpooled Cost Model

The unpooled modeling approach calculates the unit cost for each of the District's services. Its accuracy is affected by how well the cost accounting detail matches the allocation factors. As discussed at the conclusion of this section, there are accounting limitations that affect the accuracy of the cost allocations, which is unavoidable in most cost of service models.

The unpooled cost model departs somewhat from the District's historical practice of pooling costs. The District has melded supply, storage, and transmission costs that are common to groundwater and treated water supplies. A separate treated water surcharge is paid for treated water use within contractual limits. By comparison, the unpooled cost model calculates separate unit costs for each of the services (i.e., groundwater, surface water, treated water, and recycled water) without the use of specific costs that are applied to a pooled cost.

The District's pooling policy reflects the fact that many of its costs are associated with both direct and indirect benefits received by customers. For example, water conservation programs that retrofit M&I customers benefit agricultural customers by improving overall water supply reliability. The unpooled cost model calculates the unit cost for each service (e.g., groundwater) without regard for the intangible benefits received by other customers that use different sources of supply (e.g., treated water). For example, the unpooled cost model does not reflect the benefit groundwater users receive from treatment facilities, which makes other water available to customers, thereby minimizing groundwater overdraft.

2-3.2. Pooled Cost Model

Because of the District's pooling policy, the District does not calculate a rate for each of its services, as occurs in the preceding unpooled cost model. Instead, the District calculates a "basic user charge" in which the majority of costs are pooled. The basic user charge represents a base cost that is considered to be common to groundwater and treated water and to which a treated water surcharge is added. There is also a surcharge for surface water (e.g., water master charge), but none for recycled water.

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[5] Refer to Table 2-2. The pooled costs fall into two categories: direct costs that are of broad benefit to all customers and indirect costs.

To calculate unit costs that are more closely aligned with the District's pooling policy, the unpooled cost of service analysis was expanded to include a "pooled" cost of service analysis. The pooled cost model was developed by segregating the cost allocation categories into those that are of common benefit and those that are specifically related to a single service, as shown in **Table 2-2**. Hence, in the pooled cost model, there is the equivalent of the existing basic user charge, which we refer to as the "pooled cost", to which a specific cost is added for groundwater, surface water, treated water, and recycled water. The pooled costs represent the average of the common benefit costs and are nearly the same for all services.[6]

2-3.3. Cost Allocation Summary

Table 2-2 itemizes the District's cost of service model into its constituent cost allocation categories. The table shows the results of applying the allocation factors in **Table 2-1** to all of the operating and capital costs and non-rate revenues and transfers. The table shows the costs in each cost category (e.g., G, S, T, etc.) distributed among each of the services. The totals for each of the columns represent the portions of the revenue requirement that are allocated to each service. In addition, we have aggregated the cost categories into two groups: the pooled costs and the specific costs.

We note the following with respect to how the total revenue requirement is distributed among the *individual cost allocation factors*:

- 30.5% is allocated as GST, the single largest allocation class. The allocation to this class is as large as it is because it spans groundwater, surface water, and treated water, which means it will apply to many costs that are flow related, but not to any one flow.
- 25.2% is allocated as CVP and SWP, each of which is about 12 to 13% of the total. There are a few large costs to which these factors are applied.
- 19.1% is allocated to T, the third single largest allocation class.
- 25.2% is allocated by all of the other cost allocation factors.

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[6] The pooled cost differs slightly by zone because of certain allocations, which are specific to zone, rather than to the type of service. In effect, these zone adjustments are zonal surcharges, which are made before the service surcharges are made.

Table 2-2
Summary of Revenue Requirement Allocations

			Raw Water								Treated Water	Recycled Water	Totals
			Groundwater				Surface Water						
	FY 2000/01 Budget	Percent of Total	Zone W-2		Zone W-5		Zone W-2		Zone W-5		Zone W-2	Zone W-5	
			M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	
Pooled Cost Components													
GST	26,480,020	30.5%	10,323,354	220,584	1,941,143	2,647,014	44,117	44,117	9,882	44,117	11,205,692	-	26,480,020
CVP	10,845,585	12.5%	1,842,545	5,391	634,547	200,120	47,026	379	12,790	32,244	8,070,544	-	10,845,585
SWP	11,000,000	12.7%	4,865,784	-	-	-	-	-	-	-	6,134,216	-	11,000,000
SWP+CVP	1,894,067	2.2%	472,191	2,369	61,227	83,454	4,237	153	1,429	15,263	1,253,743	-	1,894,067
Zone 2	(1,673,898)	-1.9%	(791,297)	(16,908)	-	-	(3,382)	(3,382)	-	-	(858,929)	-	(1,673,898)
Zone 5	(3,901)	0.0%	-	-	(1,589)	(2,167)	-	-	(8)	(36)	-	(101)	(3,901)
Subtotal-Direct Pooled Cost	48,541,873	55.9%	16,712,577	211,437	2,635,329	2,928,421	91,998	41,268	24,093	91,588	25,805,264	(101)	48,541,873
Ind-Op	11,027,749	12.7%	3,241,773	42,704	491,580	547,317	19,027	9,660	4,766	18,293	6,648,786	3,842	11,027,749
Ind-SOS	952,264	1.1%	351,028	4,059	50,733	53,242	2,338	1,124	589	2,243	486,424	483	952,264
Ind-A&G	-	0.0%	-	-	-	-	-	-	-	-	-	-	-
Ind-RWTD	1,486,423	1.7%	770,939	16,473	142,383	194,158	1,409	1,409	303	1,351	357,998	-	1,486,423
Ind-All	(4,882,700)	-5.6%	(1,490,171)	(22,281)	(236,452)	(278,165)	(8,201)	(4,830)	(2,013)	(7,912)	(2,828,400)	(4,275)	(4,882,700)
Ind-Cap	7,029,534	8.1%	2,542,710	54,331	388,219	529,389	10,625	10,625	1,931	8,619	3,464,602	18,484	7,029,534
Subtotal-Indir. Pooled Cost	15,613,270	18.0%	5,416,280	95,285	836,462	1,045,942	25,199	17,988	5,575	22,594	8,129,411	18,534	15,613,270
Total Pooled Cost	64,155,143	73.8%	22,128,856	306,722	3,471,791	3,974,363	117,196	59,256	29,669	114,182	33,934,675	18,433	64,155,143
	100.0%		34.5%	0.5%	5.4%	6.2%	0.2%	0.1%	0.0%	0.2%	52.9%	0.0%	
Specific Cost Components													
G	5,963,324	6.9%	4,068,273	86,929	764,974	1,043,147	-	-	-	-	-	-	5,963,324
G-2	19,584	0.0%	19,174	410	-	-	-	-	-	-	-	-	19,584
G-5	-	0.0%	-	-	-	-	-	-	-	-	-	-	-
S	88,022	0.1%	-	-	-	-	27,302	27,302	6,116	27,302	-	-	88,022
T	16,605,101	19.1%	-	-	-	-	-	-	-	-	16,605,101	-	16,605,101
R	-	0.0%	-	-	-	-	-	-	-	-	-	-	-
R-5	61,397	0.1%	-	-	-	-	-	-	-	-	-	61,397	61,397
Subtotal-Specific Cost Comp	22,737,428	26.2%	4,087,448	87,339	764,974	1,043,147	27,302	27,302	6,116	27,302	16,605,101	61,397	22,737,428
	100.0%		18.0%	0.4%	3.4%	4.6%	0.1%	0.1%	0.0%	0.1%	73.0%	0.3%	
Net Revenue Requirement	86,892,571	100.0%	26,216,304	394,061	4,236,765	5,017,510	144,499	86,558	35,784	141,484	50,539,776	79,830	86,892,571
	100.0%		30.2%	0.5%	4.9%	5.8%	0.2%	0.1%	0.0%	0.2%	58.2%	0.1%	
Subtotals													
M & I	81,173,128	93.4%	26,216,304		4,236,765		144,499		35,784		50,539,776		
Ag	5,719,443	6.6%		394,061		5,017,510		86,558		141,484		79,830	
Zone W-2	77,381,197	89.1%	26,216,304	394,061			144,499	86,558			50,539,776		
Zone W-5	9,511,374	10.9%			4,236,765	5,017,510			35,784	141,484		79,830	

The total revenue requirement is distributed among the *pooled and specific cost components* as follows:

- 55.9% is allocated to the direct pooled cost components.
- 18.0% is allocated to the indirect pooled cost components. (Note that the allocation factors that comprise the indirect pooled cost components are allocated to each of the services based on composite allocation factors developed from the direct allocation factors. In effect, 82% of the total revenue requirement, which is directly allocated, serves in developing the composite allocations that redistribute indirect costs to each of the services.)
- 26.2% is allocated to specific cost components.

The costs are distributed among the *services* as follows:

- 58.2% is allocated to treated water, of which 52.9% is a pooled component. Treated water receives the largest cost allocation of any of the services.
- 41.4% is allocated to groundwater in total (30.7% to Zone W-2 M&I and agriculture, and 10.7% to Zone W-5 in nearly equal amounts to M&I and agriculture), of which 83% is a pooled component. Groundwater receives the second largest cost allocation.
- 0.6% is allocated to surface water and recycled water combined.

Other cost allocation observations are:

- 93.4% is allocated to M&I; 6.6% to agriculture.
- 89.1% is allocated to Zone W-2; 10.9% to Zone W-5.

In the Appendix is a complete copy of the cost allocation model, which shows the allocation of each operating and capital cost in the District's budgets.

2-4. COST OF SERVICE FINDINGS

2-4.1. Comparison of Revenue Requirements with Existing Revenues

The revenue requirements for the unpooled and pooled models are compared with the estimated revenue from existing rates in **Table 2-3**. The differences between each of the models and the existing rate revenues are also shown.

Table 2-3
Comparison of Revenue Requirements with Existing Rate Revenue

				Cost Allocation Models - Revenue Requirements							
	Revenue From Existing Rates			Unpooled Cost Model			Pooled Cost Model				
Service	Basic User Charge	Surcharges	Total	Total Cost	Difference* $	%	Pooled Cost	Specific Cost	Total Cost	Difference* $	%
1. Groundwater											
Zone W-2											
M&I	$ 36,270,000	$ -	$ 36,270,000	$ 26,216,304	$ (10,053,696)	-27.7%	$ 24,873,968	$ 4,087,448	$ 28,961,416	$ (7,308,584)	-20.2%
Ag	$ 77,500	$ -	$ 77,500	$ 394,061	$ 316,561	408.5%	$ 531,495	$ 87,339	$ 618,834	$ 541,334	698.5%
Zone W-5											
M&I	$ 2,530,000	$ -	$ 2,530,000	$ 4,236,765	$ 1,706,765	67.5%	$ 4,824,358	$ 764,974	$ 5,589,333	$ 3,059,333	120.9%
Ag	$ 345,000	$ -	$ 345,000	$ 5,017,510	$ 4,672,510	1354.4%	$ 6,578,671	$ 1,043,147	$ 7,621,818	$ 7,276,818	2109.2%
Subtotal	$ 39,222,500	$ -	$ 39,222,500	$ 35,864,639	$ (3,357,861)	-8.6%	$ 36,808,492	$ 5,982,908	$ 42,791,400	$ 3,568,900	9.1%
2. Surface Water											
Zone W-2											
M&I	$ 155,000	$ 5,875	$ 160,875	$ 144,499	$ (16,376)	-10.2%	$ 106,299	$ 27,302	$ 133,601	$ (27,274)	-17.0%
Ag	$ 15,500	$ 5,875	$ 21,375	$ 86,558	$ 65,183	305.0%	$ 106,299	$ 27,302	$ 133,601	$ 112,226	525.0%
Zone W-5											
M&I	$ 12,880	$ 1,316	$ 14,196	$ 35,784	$ 21,588	152.1%	$ 24,560	$ 6,116	$ 30,676	$ 16,480	116.1%
Ag	$ 5,750	$ 5,875	$ 11,625	$ 141,484	$ 129,859	1117.1%	$ 109,645	$ 27,302	$ 136,947	$ 125,322	1078.0%
Subtotal	$ 189,130	$ 18,941	$ 208,071	$ 408,325	$ 200,254	96.2%	$ 346,803	$ 88,022	$ 434,825	$ 226,754	109.0%
3. Treated Water											
Contract	$ 35,340,000	$7,980,000	$ 43,320,000	$ 45,366,413	$ 2,046,413	4.7%	$ 24,236,174	$ 14,905,366	$39,141,541	$ (4,178,459)	-9.6%
Non-contract	$ 4,030,000	$ -	$ 4,030,000	$ 5,173,363	$ 1,143,363	28.4%	$ 2,763,774	$ 1,699,735	$ 4,463,509	$ 433,509	10.8%
Subtotal	$ 39,370,000	$7,980,000	$ 47,350,000	$ 50,539,776	$ 3,189,776	6.7%	$ 26,999,949	$ 16,605,101	$43,605,050	$ (3,744,950)	-7.9%
4. Recycled Water											
Zone W-5											
M&I	$ -	$ -	$ -	$ -	$ -	0.0%	$ -	$ -	$ -	$ -	0.0%
Ag	$ 112,000	$ -	$ 112,000	$ 79,830	$ (32,170)	-28.7%	$ (101)	$ 61,397	$ 61,296	$ (50,704)	-45.3%
Subtotal	$ 112,000	$ -	$ 112,000	$ 79,830	$ (32,170)	-28.7%	$ (101)	$ 61,397	$ 61,296	$ (50,704)	-45.3%
Total	$ 78,893,630	$7,998,941	$ 86,892,571	$ 86,892,571	$ -		$ 64,155,143	$ 22,737,428	$86,892,571		
	90.8%	9.2%	100.0%				73.8%	26.2%	100.0%		

*Differences compare modeled costs with existing rate revenue.

The pooled cost model arrives at a similar result for surface water as the unpooled cost model. The pooled cost model allocates even more to recycled water. The dollar amounts for these two services are, again, small compared to the other revenue requirements.

2-4.1.1. Unpooled Cost Model

Compared to the existing rate revenues, the most significant difference is that the unpooled cost model shifts costs from groundwater to treated water. Within the groundwater service categories, however, the unpooled cost model indicates that Zone W-2 M&I groundwater revenues are 27.7% less than existing rate revenue and model-based revenues from Zone W-2 agriculture and Zone W-5 M&I and agricultural customers are significantly more.

With respect to surface water charges, the unpooled cost model indicates that existing agricultural revenues are below the cost of service shown in the model. Recycled water is also allocated more under the unpooled cost model. In both cases, the dollar amounts are small compared with the groundwater and treated water revenues.

2-4.1.2. Pooled Cost Model

Compared to the District's current charges, which pools 91% of the costs, the pooled cost model pools only 74%. The costs associated with the pooled cost model's specific costs are three times that of the existing charges. Groundwater, which is currently not surcharged, accounts for $5.98 million in specific costs and the treated water surcharges are doubled under the pooled cost model.

Compared to existing rates and to the unpooled cost model, the pooled cost model indicates that treated water revenues for contract water exceed the cost of service and groundwater revenues are below the cost of service. This result is the opposite of the unpooled model. The pooled cost model is similar to the unpooled model in so far as it also reduces the allocation to Zone W-2 M&I groundwater considerably, but not by as much as the unpooled cost model reduction. Coupled with this lesser reduction in Zone W-2 M&I groundwater is an increase in costs to Zone W-5 groundwater that is greater than the unpooled cost model's increase. The net effect is an increased allocation of $3.6 million to groundwater, rather than the $3.4 million decrease under the unpooled model.

A similar difference occurs with treated water. Under the pooled cost model, treated water is allocated $3.7 million less, but under the unpooled model, treated water is allocated $3.3 million more.

2-4.2. Comparison of Unit Costs with Existing Rates

Unit costs were calculated for the unpooled and pooled cost models by dividing the revenue requirement allocations in **Table 2-3** by the units of service in **Table 2-1**. These unit costs and existing rates are compared in **Table 2-4**. The differences between each of the models and the existing rates are also shown.

2-4.2.1. Unpooled Cost Model

The unpooled cost model indicates that the District's existing Zone W-2 M&I charges for both groundwater and surface water are higher than the allocated cost, and the agricultural charges are lower. Of particular note is the $10.1 million (27.7%) decrease in Zone W-2 M&I groundwater allocated costs. Zone W-5 M&I costs increase $1.7 million (67.5%). The unpooled cost model also indicates that agricultural costs are higher in both Zones W-2 and W-5 than the current charges. The increased allocation to treated water ($2.0 million for contract water and $1.1 million for non-contract water) amounts to an increase of 6.7%. The increased allocations for surface water and recycled water are high in percentage terms, although there is comparatively little revenue involved.

Table 2-4
Comparison of Unit Costs with Existing Rates

				Cost Allocation Models - Unit Costs in $/AF							
	Existing Rates ($/AF)			Unpooled Cost Model			Pooled Cost Model				
					Difference*					Difference*	
Service	Basic User Charge	Surcharges	Total	Unit Cost	$	%	Pooled Cost	Specific Cost	Unit Cost	$	%
1. Groundwater											
Zone W-2											
M&I	$ 310.00	$ -	$ 310.00	$ 224.07	$ (85.93)	-27.7%	$ 212.60	$ 34.94	$ 247.53	$ (62.47)	-20.2%
Ag	$ 31.00	$ -	$ 31.00	$ 157.62	$ 126.62	408.5%	$ 212.60	$ 34.94	$ 247.53	$ 216.53	698.5%
Zone W-5											
M&I	$ 115.00	$ -	$ 115.00	$ 192.58	$ 77.58	67.5%	$ 219.29	$ 34.77	$ 254.06	$ 139.06	120.9%
Ag	$ 11.50	$ -	$ 11.50	$ 167.25	$ 155.75	1354.4%	$ 219.29	$ 34.77	$ 254.06	$ 242.56	2109.2%
2. Surface Water											
Zone W-2											
M&I	$ 310.00	$ 11.75	$ 321.75	$ 289.00	$ (32.75)	-10.2%	$ 212.60	$ 54.60	$ 267.20	$ (54.55)	-17.0%
Ag	$ 31.00	$ 11.75	$ 42.75	$ 173.12	$ 130.37	305.0%	$ 212.60	$ 54.60	$ 267.20	$ 224.45	525.0%
Zone W-5											
M&I	$ 115.00	$ 11.75	$ 126.75	$ 319.50	$ 192.75	152.1%	$ 219.29	$ 54.60	$ 273.89	$ 147.14	116.1%
Ag	$ 11.50	$ 11.75	$ 23.25	$ 282.97	$ 259.72	1117.1%	$ 219.29	$ 54.60	$ 273.89	$ 250.64	1078.0%
3. Treated Water											
Contract	$ 310.00	$ 70.00	$ 380.00	$ 397.95	$ 17.95	4.7%	$ 212.60	$ 130.75	$ 343.35	$ (36.65)	-9.6%
Non-contract	$ 310.00	$ -	$ 310.00	$ 397.95	$ 87.95	28.4%	$ 212.60	$ 130.75	$ 343.35	$ 33.35	10.8%
4. Recycled Water											
Zone W-5											
M&I	$ 80.00		$ 80.00	$ 57.02	$ (22.98)	-28.7%	$ (0.07)	$ 43.86	$ 43.78	$ (36.22)	-45.3%
Ag	$ 20.00		$ 20.00	$ 57.02	$ 37.02	185.1%	$ (0.07)	$ 43.86	$ 43.78	$ 23.78	118.9%

*Differences compare modeled unit costs with existing rates.

2-4.2.2. *Pooled Cost Model*

Compared to the District's current charges, the pooled cost model's unit costs are both lower and higher. The District's current basic user charge is higher than the pooled cost in Zone W-2 M&I and for treated water and lower for Zone W-5 M&I. The pooled cost is higher for agriculture. Under the pooled cost model, the costs recovered from specific costs are three times that of the District's current charges. As result, the unit costs for the specific costs are much higher.

The pooled unit costs differ only slightly between zones. The Zone W-2 unit cost is less than the Zone W-5 unit cost because Zone W-2 receives a greater portion of property tax revenue.

The pooled cost model's specific costs range from about $35 to $131 per acre-foot. When added to the pooled cost, the total unit costs for all services fall within a slightly narrower range ($248 to $343, not including recycled water) than the unpooled cost model's unit costs ($167 to $398, not including recycled water). This is to be expected because of way each model allocates treatment costs. The unpooled cost model reduces the allocation to contract treated water and increases the allocation to Zone W-5 groundwater and thereby narrows the range.

2-4.3. Summary of Cost of Service Allocations

Generally speaking, there is a wide range of differences between the District's current charges and the two models, as well as between the two models. Most of the largest percentage differences correspond to agriculture or surface water charges, where fewer dollars are involved. The large differences in agricultural charges are due to the limitation in the District Act as to how much agriculture can be charged. Other large differences may also reflect the Board policies to promote affordability and resource management as well as rate setting policies associated with the different zones (W-5 versus W-2). Hence, in reviewing the differences, it is important to realize that the cost of service analyses for both the unpooled and pooled cost models are the results of applying logical allocation factors, which in some cases may not reflect Board policies.

At the highest level, the unpooled and pooled cost models result in significantly different allocations both when compared with existing rate revenues as well as when compared with each other. The unpooled model shifts costs from groundwater to treated water and the pooled cost model reverses the shift, decreasing the allocation to treated water and increasing the allocation to groundwater. This shift is driven by usage-based allocation factors that do not reflect the benefits groundwater receives for treated water and vice versa.

In the pooled cost model, pooling shifts costs that are currently allocated to treated water in the unpooled model into the overall cost pool. In the cost pool, treated water costs are averaged across all services. This illustrates how other services share in the cost of treatment because of the associated benefits received by all customers.

Within the categories of groundwater service, there is a pronounced shift in both models from Zone W-2 to Zone W-5. This shift is to be expected because the majority of use is agricultural groundwater use.

Both models are in agreement in comparatively minor areas. Both models decrease the allocation to Zone W-2 M&I surface water; the unpooled model decreases it more. Both models also decrease the allocation to recycled water.

2-5. ISSUES FOR FUTURE EVALUATION

A number of assumptions are reflected in the current model, many of which are fairly straightforward. Other assumptions were required because of insufficient cost accounting or other data. Some examples are listed below.

- **Agricultural rate caps.** The cost of service has been modeled without regard for the provision in the District's Act that limits the agricultural rate to 25% of the rate for non-agricultural water (current District Board policy sets the agricultural rate at 10% of M&I). The models ignore this rate cap but indicate the impact of the cap.

  As a result, the models are useful analyses, but are currently not capable of deriving rates because they do not reflect this rate cap. The models could be modified to include the rate cap so that the final unit costs are faithful to the District's Act. Presumably the excess cost that is allocated to agriculture would be reallocated back to non-agricultural charges on some explicit, proportionate basis.

- **Recharge costs.** The District does not account for the costs of groundwater recharge separately from other groundwater basin operations and maintenance expenses. Groundwater recharge costs are included in the following accounts.

927601	Raw Water T&D Gen'l Oper	1,248,728
927605	RW Facilities Sandbag Protectn	16,798
927680	Raw Water Trans & Dist PM	109,725
927681	Raw Water Trans & Dist CM	82,921
927699	RW General Maintenance	2,254,212
	Sub-total	3,712,384

For purposes of modeling, the current model arbitrarily allocates half of the expenses in cost center 9276XX is related to groundwater recharge (classified as G) and half to other raw water transmission and distribution (classified as GST). Separate accounting for groundwater recharge would eliminate the need for this arbitrary assumption.

- **Zone differences.** As with the cost accounting for recharge costs, the District does not segregate all costs between Zones W-2 and W-5. The allocations in the model apportion these costs between the two zones based on flow, which, although a reasonable approach in the absence of better accounting detail, may not be as precise as direct cost allocations. Operational accounting codes could be added, particularly in breaking out the detail for larger accounts.

- **Allocation factors.** Assumptions were made regarding the flows used for deriving allocation factors. For example, projected FY 2000-01 flows were used for the allocation factors for both operating and capital expenses, as well as other revenue and transfers to reserves. We believe it is appropriate to allocate operating costs based on projected flows for the same period. Capital costs can be treated differently because capital assets have service lives that extend beyond the current year.

  Other allocation factors based, for example, on some measure of future or long-term water demand or system capacity can be used to allocate these longer-lived assets. In this way, the cost is distributed over future users, who will be the principal beneficiaries of the facilities. The model can easily incorporate different allocation factors for capital costs. This might be a valuable exercise if the usage patterns are projected to change significantly between zones or among customers.

- **Capital cost allocations.** As described above, capital cost allocation factors can encompass more than the immediate water demands by current customers. Capital costs in the current year can also be allocated among services based on an average of several years' expenditures, which is the case in the model. In this way, the allocation factors can be modulated over more than one year to stabilize any fluctuations from year to year that are caused by irregular construction patterns. The model segregates capital costs by funding source (cash and debt). In both cases, the five-year CIP was used as the basis for allocating FY 2000-01 cash outlays and debt service. By doing so, construction delays and other timing vagaries are smoothed into an average allocation among the cost categories. The District may determine there are other ways of allocating capital costs because they are easier to update, less dependent on projections, or address equity issues between growing and non-growing municipal segments of the service area.

- **Wheeling costs.** The models have not been specifically designed to analyze the impact of wheeling on the District's rates. Presumably this could be analyzed at various levels of detail. At a minimum, wheeling water for customers would decrease the District's variable charges for imported water because the wheeling customer would purchase the water directly. The wheeled water would presumably enter the District no differently from the District's current imported supplies and incur the same operating and capital costs, unless the District chose to isolate those transmission, treatment, and distribution facilities that are required by the wheeling customer. An analysis of this type was made in connection with the recent debt issuance, but has not been incorporated in the cost allocation models.

- **Noncontract treated water.** The District prices noncontract treated water between the basic user charge and treated water rates depending on whether the District needs to encourage the use of treated water instead of groundwater. When the District wants to encourage the use of treated water or discourage the use of groundwater, it reduces the treated water surcharge for noncontract water.

  The treated water surcharge for contract water is currently $70 and the basic user charge is $310 (Zone W-2). Hence, the cost of noncontract water could range from $310 to $380. The unpooled costs are $224.07 for groundwater and $397.95 for treated water, which is a $173.88 cost increment. In the pooled cost model, the treated water specific cost is a similarly large increment, $130.75. In either case, both models indicate wider ranges between the groundwater and treated water unit costs, which would give the District a wider range over which to adjust the treated water surcharge for non-contract water. With a wider range, the effect on customers may be greater and therefore revenues may be more variable.

- **Direct customer allocations.** It has been the District's practice not to allocate specific operating costs to individual customers, such as for field services that are provided on an as-needed basis (e.g., well inspection and monitoring) or a routine basis (e.g., customer billing). Capital costs for specific facilities are similarly pooled. The District also does not charge individual customers for specific capital facilities, either as a lump-sum advance or as an ongoing fixed charge (e.g., a "meter charge" that is proportionate to the size of the customer's service connection). The effect of introducing direct customer charges would be a reduction in the amount of revenue that is required from the existing rates, which are currently all based on the quantity of water used.

The Appendix contains the full cost of service models.

SECTION 3. ALTERNATIVE COST OF SERVICE APPROACHES

SECTION 3. ALTERNATIVE COST OF SERVICE APPROACHES

3-1. INTRODUCTION

3-1.1. Scope and Purpose

In 1995, the District commissioned a survey of wholesale rate structures to learn about the industry practice in structuring wholesale water rates. The scope of services for Task 3 in the current study is intended to provide the District with detailed information about trends in setting wholesale water rates, with the emphasis on the approaches that are being used or considered for determining the cost of service by similar agencies. The current study contains survey results from a sample of wholesale water agencies located primarily in the western United States. This cohort of agencies share some common characteristics, such as their developmental histories and governances, but are also significantly different geographically and climatically.

Cost of service analysis is closely related to the complexity of the rate structure. In turn, the complexity of a rate structure is usually a reflection of the heterogeneity of the wholesale customers. For example, rate structures may account for different rates of growth, peak demands, or water supply options. In other words, rate structures can be refined to account for the different levels of operational and capital services that are required by each customer.

The District is a perfect case in point. Its rate structure differentiates between different types of customers (M&I and agriculture), different types of supply (treated and untreated), and areas of use (Zones W-2 and W-5), all of which are valid characteristics to consider in designing rates. Unlike some other wholesale agencies, the District's rate structure does not contain other features, such as peak charges and capacity allocations, which other agencies have used to achieve their rate-making objectives.

A more complex rate structure can indicate a more diverse group of wholesale customers. However, the sophistication of rate structures usually lags behind the diversity in the service area. Simple rate structures may mask the fact that differences between wholesale customers are so extreme that attempts to refine rates are stymied.

Hence, it is possible to make inferences about cost of service objectives from rate structures that may oversimplify the agencies' concerns. The District is aware of this, which is why this section of the report consists of more than a table summarizing the rates charged by numerous agencies. In this section, rates are described in detail for the agencies surveyed and answers are provided to the following three questions:

- ***What are the agency's cost of service objectives?*** The cost of service objectives are dependent on the rate structure, which dictates the type of cost allocations that are required.
- ***What are the rate structure's strengths and weaknesses?*** We have elicited the agency's comments about the effectiveness of its rate structure, rather than render a third-party evaluation of the agency's rate structure.
- ***What potential changes in the rate structure are being considered?*** When provided by the agencies, we have provided comments regarding possible refinements that might remedy any weaknesses.

After a description of each agency's rate structure, a comparative evaluation is made of rate structures and the approaches to determining the cost of service. This section ends with a comparison of the District's approach to the cost of service with the agencies surveyed.

3-1.2. Wholesale Water Agencies Surveyed

The following table lists the wholesale water agencies and the primary contact used for the survey.

Table 3-1
Agency Contacts

Agency	Contact	
Contra Costa Water District	Wayne Niehus	(925) 688-8104
Denver Board of Water	Kerry Kirkendahl	(303) 628-6439
Greater Vancouver Water District	Jude Pillai	(604) 451-6181
Metropolitan Water District of Orange County	Karl Seckel	(714) 963-3058 X5024
Metropolitan Water District of Southern California	Shane Chapman	(213) 217-6005
Orange County Water District	John Kennedy	(714) 378-3200
Portland Bureau of Water Works	Anne Conway	(503) 823-7468
San Diego County Water Authority	Ken Weinberg	(858) 522-6741
San Francisco Public Utilities Commission	Bill Laws	(415) 487-5251
Seattle Water Department	Jerry Allen	(206) 233-7905
Southern Nevada Water Authority	Matt Thorley	(702) 259-8169
Zone 7 Water Agency	Vince Wong	(925) 224-7730 x 350

These agencies are located in the western United States and Canada. They provide treated and untreated wholesale water service to municipalities and private water companies. Some also provide service to retail customers. Most supply only surface water (treated, untreated, or both) from local or imported sources, but some provide groundwater. The majority serve member agencies; four serve outside-city, suburban customers. As a group, these agencies comprise a broad sample of wholesale water agencies that range from small to large in size with rate structures that range from very simple to very complex.

Table 3-2
Agency General Information

	Wholesale Customers				Population	Percent of Wholesale Revenue		
Agency and Type of Charge	Number	Type	Deliveries (TAF)	Type of Supply	Served (Million)	Fixed Charges	Variable Charges	Other Sources
Contra Costa Water District	5	Members	31	Surface	0.20	9%	91%	0%
Denver Board of Water	29	Suburban	51	Surface	0.23	0%	100%	0%
Greater Vancouver Water District	18	Members	290	Surface	1.80	0%	100%	0%
Municipal Water District of Orange County	29	Members	250	Surface	2.00	12%	88%	0%
Metropolitan Water District of Southern California	26	Members	1,700	Surface	17.00	11%	78%	11%
Orange County Water District	20	Members	360	Groundwater	2.00	0%	87%	13%
Portland Bureau of Water Works	19	Suburban	50	Surface	0.34	0%	100%	0%
San Diego County Water Authority	23	Members	600	Surface	2.90	20%	61%	19%
San Francisco Public Utilities Commission	26	Suburban	190	Surface	2.20	10%	90%	0%
Santa Clara Valley Water District	**13**	**Members**	**270**	**Surface and Groundwater**	**1.60**	**0%**	**82%**	**18%**
Seattle Water Department	29	Suburban	76	Surface	0.69	5%	95%	0%
Southern Nevada Water Authority	5	Members	419	Surface	1.30	0%	100%	0%
Zone 7 Water Agency	4	Members	34	Surface and Groundwater	0.16	1%	99%	0%

3-2. COST OF SERVICE APPROACHES

3-2.1. Contra Costa Water District

Contra Costa Water District is both a wholesale and retail water agency. The District provides both treated water and untreated water from a combination of local and imported supplies. Its wholesale rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Monthly Service Charge, per account	$112.59	
Quantity Charge		$419
Demand charges - recording meters		
Maximum day	$2.013/gal./min.	
Maximum hour	$1.680/gal./min.	
Demand charges - nonrecording meters		
Maximum month	$1.4640/gal.min.	

3-2.1.1. *Cost of Service Objectives*

The District relies predominantly on a variable rate structure to recover wholesale service costs. In setting its rates, the District relies on cost of service principles. The District's rates climbed steeply during the early 1990s to fund the debt service on Los Vaqueros Reservoir. Given the magnitude of the rate increases, the District's objectives have balanced financial stability and accountability with an environmental, conservation orientation. This balance has been difficult to strike considering the mix of services and the Board's interest in protecting customer classes from inequities.

3-2.1.2. *Rate Structure Strengths and Weaknesses*

The District's wholesale rates are part of a larger set of rates that also includes retail customers. Its wholesale rates are based on cost of service principles that allocate costs proportionately between treated water and untreated water wholesale and retail customers. The wholesale rates further allocate the costs of peaking based on demand recording readings, which allows not only for accurate cost allocations to the wholesale customers as a class, but also allocated costs fairly among the wholesale customers. If there are any weaknesses in this approach, it is that the charges do not recover more fixed costs from fixed charges. However, the wholesale customer class places a sufficiently stable demand on the District such that cash flow is not at risk.

3-2.1.3. *Potential Rate Structure Changes*

With its current heavy reliance on revenue from variable charges, the District realizes that it is at risk from a cash flow perspective if wheeling became prevalent or when its large, retail industrial customers reduce their consumption by pumping directly from the Delta. The District would therefore like to increase the amount of revenue collected from fixed charges. Conservation is still a priority for the Board, and therefore the increase in revenue from fixed charges will have to be balanced against the need to promote conservation.

The District is currently undertaking a wholesale rate study, but does not anticipate any changes at this time. This is largely because the District feels that water conservation is still an important message to send through the rate structure, so it is hesitant to change the rate structure.

3-2.2. Denver Board of Water

The Denver Board of Water serves 29 wholesale suburban customers and is responsible for ensuring a supply of water to the City and County of Denver and customers who live in the surrounding suburbs. Its wholesale rate is summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Uniform Quantity Charge		$589.79

3-2.2.1. *Cost of Service Objectives*

Denver Water sets its rates based upon a cost of service analysis. It sets rates at a level sufficient to service its debt and to meet its expenses of operation and maintenance. The Board continually reviews its structure of water rates, adjusting them as may be necessary to provide adequate levels of revenue.

3-2.2.2. *Rate Structure Strengths and Weaknesses*

They have a uniform rate for the wholesale customers, which conforms with the prescribed methodology.

3-2.2.3. *Potential Rate Structure Changes*

The current rates have been the subject of past contention with the wholesale customers and currently represent an agreed upon methodology. Although seasonal rates have been considered in the abstract, there are no structural changes planned for the future.

3-2.3. Greater Vancouver Water District

The Greater Vancouver Water District serves the metropolitan Vancouver, British Columbia, area. It serves 18 wholesale municipal water agencies, making it Canada's largest wholesale water agency. Its rate is summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Uniform Quantity Charge		$130

3-2.3.1. *Cost of Service Objectives*

This district typifies the classic wholesale water agency that is experiencing growing pains. Its rate-making objectives are to provide water for the needs of its member agencies on demand and at a price that recovers all costs. From the late 1980s through the 1990s, the District's rates have increased approximately 14 percent per year to keep pace with the costs of replacing aging facilities and providing expanded capacity for growth.

3-2.3.2. *Rate Structure Strengths and Weaknesses*

The uniform quantity charge assures that the municipal customers pay for all of the water that is delivered in proportion to the deliveries. The absence of fixed charges was not a concern because water sales were stable and gradually increasing. This was a reasonable approach until recently, when capacity constraints and differences among the wholesale customers led to studying different rate structures.

Although the District has abundant water supply, it is facing seasonal storage limitations. By the end of summer, storage levels drop to such low levels that brief periods of rationing can be imposed. Studies were conducted that determined that the cost of expanding seasonal storage was so great that conservation-oriented pricing should be considered to shift demands from the peak season.

3-2.3.3. *Potential Rate Structure Changes*

Seasonal rate structures were studied in which the costs of peak demands were allocated among the wholesale customers in proportion to their peak month demands. One of the structures considered was a summer-winter set of quantity charges. In effect, two different quantity charges were levied based on the time of the year. Under the other structure, a surcharge was levied for above-average winter water use during the summer, a slightly different variation. In either case, the summer cost of water was more than twice the winter cost. No fixed charges were considered.

Seasonal rates have not been adopted to date for a variety of reasons. A key obstacle to redesigning the wholesale rates is that the price signal cannot be passed through to the retail customers very effectively. Over two-thirds of the member agencies' residential customers are unmetered. Hence, the District has focused its attention on universal retail metering as the best measure that can promote efficient water use, and thereby attenuate summer peaking.

3-2.4. Municipal Water District of Orange County

The Municipal Water District of Orange County serves as the representative for local wholesale water agencies in Orange County. MWDOC is unusual in so far as it does not operate any facilities. It provides political representation and management support for its member agencies. MWDOC's rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Retail Meter Charge, per year	$3.30	
Readiness-to-Serve Charge (MWDSC)	$22.71/AF	
Quantity charge (MWDSC)		$431
Import Sales Increment		$4.75

3-2.4.1. *Objectives of Rate Structure*

MWDOC passes through MWDSC's charges with a slight mark-up for MWDOC management expenses, which are about $3,000,000 annually, compared with MWDSC's charges, which are about $120,000,000 annually. The retail meter charge is a fixed charge that recovers about half MWDOC's management expenses; the import sales increment is a variable charge that generates nearly an equivalent amount of revenue as the retail meter charge. In both cases, MWDOC's objective is to allocate its management expenses among its member agencies using reasonable measures of benefit, such as the size of their retail customer bases and the amount of water purchases.

3-2.4.2. Rate Structure Strengths and Weaknesses

MWDOC's rate structure is based on measures of benefit that its member agencies agree are fair. However, there is a weak correspondence between its costs, which are entirely fixed, and the variable revenue generated by import sales increment. Moreover, the import sales increment is dependent on MWDSC's rate structure, which means that it could be affected by changes in MWDSC's rate structure.

3-2.4.3. Potential Rate Structure Changes

Sweeping changes are being proposed in the MWDSC rate structure. MWDOC, as the wholesale interface between MWDSC and the local wholesale agencies, is currently studying the potential impacts that MWDSC's proposed rates could have on MWDOC's member agencies. However, these rate structure changes are still being formulated and have not been finalized. MWDOC is considering whether it should convert its variable charge into another type of fixed charge in line with MWDSC's proposed restructuring. For example, it is considering a fixed charge that would be linked to contract entitlements, as proposed in MWDSC's Tier 1 contract water charge (see below).

3-2.5 Metropolitan Water District of Southern California

MWDSC has been studying its rate structure intensively since the early 1990s. Changes have been made during that time and others are still being considered. Its current rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Readiness-to-serve Charge	Varies	
Connection Maintenance Charge	$50/cfs	
Full Service Rate - treated		$431
Full Service Rate -untreated		$349
Shift Seasonal Storage Service - trtd		$323
Shift Seasonal Storage Service - untrtd		$266
Long-term Seas. Stor. Service - trtd		$290
Long-term Seas. Stor. Service - untrtd		$233
Agricultural - treated		$294
Agricultural - untreated		$236

The most recent rate proposal was presented in a November 10, 2000, draft report, *Proposed Rate Structure*, which is considered a staff-level report that has not been approved by MWDSC's member agencies or management. Nonetheless, the report is valuable not only because it indicates the current alternatives being considered by MWDSC, but because it contains useful information on MWDSC's objectives. The proposed rates in this report are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Readiness-to-serve Charge	$4/AF	
Capacity Reservation Charge	$25/AF	
Supply Contracts (Tier 1)	$102/AF	
Growth Charges ($/connection)		
Treated deliveries	$1,567	
Untreated deliveries	$1,097	
System Access Rate		$129
Water Stewardship Rate		$22
System Power Rate		$43
Treatment Surcharge		$88
Peaking Surcharge		$75
Tier 2 Supplies (Exchange Pool)		$152
Interruptible Service Agreements		Unspecified

3-2.5.1 *Cost of Service Objectives*

MWDSC's sustained rate setting process originated with the Rate Refinement Process and continued during its Strategic Planning Process in recognition of the need to make gradual, comprehensive improvements that address its evolving circumstances.

3-2.5.1.1. Strategic Planning Principles

Between 1998 and 1999, MWDSC developed Strategic Planning Policy Principles that establish "a comprehensive approach to how Metropolitan conducts business in the future, providing opportunity for member agencies to competitively manage their cost of imported water supply while ensuring reliability, quality, and fairness." These principles are:

- **Regional provider.** MWDSC is responsible for managing regional infrastructure, developing additional supplies and capacity, and allocating water during shortages.
- **Local resource promotion.** MWDSC will provide financial incentives to develop conservation programs and local resources.
- **Imported water supply.** MWDSC is responsible for providing imported water to meet the committed demands of its member agencies.

- **Choice and competition.** MWDSC will collaborate with its member agencies to develop resources to meet demands that exceed MWDSC's commitments.
- **Water quality responsibility.** MWDSC is responsible for assuring that its supplies meet potable, recycled, and groundwater replenishment standards.
- **Cost allocation.** MWDSC's current costs and financial commitments may not be fairly allocated under status quo conditions and will be addressed in a revised rate structure.
- **Rate structure.** The framework for a revised rate structure will address cost allocations, financial commitments, unbundling of services, and fair compensation for services such as wheeling, peaking, growth, and others. The member agencies' commitments for demand for imported supplies and local resource programs have not yet been determined.
- **Financial integrity.** MWDSC will take all necessary steps to assure the financial integrity of its operations.

Additional guidelines were approved in 2000 for developing the rate structure:

- **Supply allocations.** Dry-year allocations will be based on need.
- **Economic impact.** No class of people will be significantly disadvantaged economically.
- **Fair.** The structure will be fair.
- **Simple.** The structure will be simple and easy to understand.

3-2.5.1.2. Composite Rate Structure Framework

These principles laid the foundation for a related Composite Rate Structure Framework whose primary objectives are the bases for designing rates:

- Pricing and market mechanisms will promote the best use of available water.
- Current and future costs of water supply and infrastructure will be fairly allocated among customer classes.
- Rates and charges will generate sufficient revenue.
- A greater portion of fixed costs will be recovered from fixed revenue sources.

The Framework comprises elements that are designed to meet these objectives:

- **Regional approach.** Rates and charges will be applied uniformly without geographic differentiation.

- **Supply contracts.** Long-term, take-or-pay contractual arrangements will be relied upon to provide greater certainty.
- **Two-tier pricing structure.** Supply contracts will define the first tier and as-needed commodity purchases will define the second. All services (e.g., conveyance and distribution) will be uniform in both tiers with the exception of supply. Four goals will be met with tiered pricing:
  - Member agencies will not be placed at significant economic disadvantage.
  - Member agencies will have equal access to supplies based on need.
  - Pricing will balance risk and stability between MWDSC and member agencies.
  - Tier 2 will be priced higher than Tier 1.
- **Shortage allocations.** Tier 2 water will be allocated during shortages based on need.
- **Market mechanisms**. The Framework will be responsive to market forces between willing parties that want to develop additional imported water or local resources. The Framework will account for transactions that may increase or decrease Tier 1 contract supplies.
- **Uniform system access rate.** A uniform quantity rate will be charged for use of average annual system capacity.
- **Peak and growth capacity access rate.** Other uniform and non-uniform fixed and quantity rates and charges will recover the costs of peak capacity for current customers and the average and peak capacity for future growth.
- **Uniform water stewardship rate.** A uniform quantity rate will recover the costs of conservation programs and development of local resources.
- **Power rate.** A uniform quantity rate will be charged for power, which for wheeling parties may be different depending on the source of power and any transactional costs.
- **Uniform treatment surcharge.** A uniform treatment rate will cover the cost of MWDSC's treatment plants.
- **Interruptible service agreements.** Water rates for groundwater replenishment and agricultural customers will reflect the system benefits paid for by these classes of customers.
- **New users.** Some cost of capacity will be allocated to new users.
- **New facilities.** Collaborative planning will ensure fiscal accountability and financial commitment for investments in water projects.
- **Reserve policies.** Minimum and maximum reserve balances will be governed by policies that ensure that an unacceptable amount of risk is not transferred to member agencies and wholesale purveyors while at the same time not unduly burdening rate payers with excessive reserve levels.

3-2.5.1.3. *Additional Evaluation Criteria*

The rate-making objectives developed as part of MWDSC's strategic planning and rate refinement process reflect Board policy and technical issues raised by member agencies. The detailed rate design was also guided by standard rate-making criteria that are used for evaluating how well competing objectives are balanced. The criteria fall into five categories as described below.

- **Efficient resource management.** Achieving broad resource management goals that benefit the region.
  - *Economic efficiency.* The rate structure sends a price signal that encourages member agencies to invest in economic local sources before increasing their use of imported water. The rate structure unbundles costs and prices additional water supply at the cost of development, rather than as a melded combined rate, so that member agencies can choose whether they will pay MWDSC for the increased cost of peaking and growth or select other options.
  - *Future capital investments.* The price signal encourages the most efficient use of water so that capacity expansion is deferred as long as possible. The rate structure provides incentives (i.e., growth charges can be avoided) to relieve the need to expand capacity to meet the needs of growth by developing economic local sources. Incentives (i.e., capacity reservation and peaking surcharges can be reduced or avoided) are also provided to reduce seasonal and daily peaking, which also defers the time when future capacity expansion will be required.
- **Customer equity.** Achieving fair cost allocations among member agencies
  - *Like rates for like services.* All member agencies pay the same rate for the same service regardless of location in the service area.
  - *Standby service costs.* The rate structure recovers the cost of standby services (e.g., emergency storage) based on a reasonable measure of each member agency's potential need.
  - *Growth pays a fair share.* Member agencies will be allocated a proportionate share of the cost of capacity expansion created by growth within their service areas. The cost of capacity will approximate the unit cost of the system's conveyance, distribution, and treatment facilities, valued on the basis of depreciated reproduction cost less outstanding debt.
  - *Peak vs. average usage.* The costs of meeting peak demands will be paid in proportion to each member agency's peaking.
- **Financial sufficiency.** Achieving complete cost recovery.
  - *Cost recovery.* Rates and charges will be adjusted annually to ensure that sufficient revenue is collected so that compliance with bond covenants, the

Administrative Code, Board policies, reserve policies, and legal requirements occurs.

- *Increased fixed revenues.* The rate structure will increase the amount of revenue generated by fixed charges so that the reliance on revenue from variable charges is reduced, which balances the risks presented by unbundling rates and increasing the member agencies' options.

- **Customer impacts.** Achieving a fair distribution among the member agencies of the impacts of implementing a new rate structure.

  - *Reliability benefits.* The rate structure will align the costs of reliability with the member agencies' requirements through the use of supply contracts.

  - *Emergency standby benefits.* The rate structure will ensure that member agencies will pay for their required standby service through the readiness-to-serve charge so that the service is there whenever required.

  - *Peak capacity benefits.* The rate structure will ensure that member agencies pay to reserve the peak capacity that they plan to use and pay more for unplanned, excess peak capacity.

- **Simplicity.** Achieving a rate structure that is no more complicated than is required to optimize resource management, customer equity, and financial sufficiency.

  - *Understandable.* The derivation and application of the rates can be explained, understood, and accepted.

  - *Practical.* The rates can be implemented and administered by MWDSC and its member agencies without disproportionate resource requirements.

3-2.5.2. *Rate Structure Strengths and Weakness*

MWDSC's current rates consist of set of fixed and variable charges. The fixed charges generate 11 percent of the rate revenue and, combined with property taxes, 22 percent of MWDSC's total revenue.

3-2.5.2.1. Fixed Charges

There are three active and one suspended fixed charge.

- **Readiness-to-serve (RTS) charge.** This charge covers of portion of debt service for projects that meet the reliability and quality needs of existing users. It is based on rolling average demand, converted to a flat monthly charge. The amount paid by each member agency is net of revenue from standby charges.
- **Standby charge.** This is a land-based charge that covers a portion of the costs of debt service. It was established in FY 1992-93 and can be charged on all land

parcels that have access to MWDSC's supply (regardless of whether water is being used). Revenue from the standby charge is netted against the RTS charges at the option of the member agency.

- **Connection maintenance charge.** This charge covers a portion of the costs associated with maintaining service connections. It is based on the capacity of the connection.
- **New demand charge.** This charge was intended to recover the cost of additional capacity for growth. It would have been charged for demand in excess of historic average demands. The charge has been suspended pending further study.

3-2.5.2.2. *Variable Charges*

There are four pairs of volumetric charges whereby each charge is for either treated or untreated water.

- **Full service rate.** The rate paid for basic water purchases at any time during the year.
- **Seasonal storage service rate.** The rate charged for water that is delivered during the off-peak season for subsequent use during the next peak season. The rate is reduced from the full service rate because peak demand is shifted to the off-peak season.
- **Long-term seasonal storage service rate.** The rate charged for water that is delivered and kept in groundwater storage for over one year. The rate is reduced because the peak load is shifted and reliability is improved. A certification process is required to determine whether the storage objective is achieved.
- **Agricultural rate.** The rate charged for water used by agricultural customers.

The following table summarizes the water sales and revenue associated with each of these charges for FY 1999-00.

Table 3-3
MWDSC Water Sales from Current Charges

	Acre-Feet (FY 1999-00)	Rate ($/AF)	Revenue	Percent of Total
Fixed Charges				
Readiness-to-serve/Standby			$ 80,000,000	11%
Connection maintenance			$ 2,849,000	0%
Subtotal			$ 82,849,000	11%
Variable Charges				
Basic treated	1,021,000	$ 431	$ 440,051,000	59%
Basic untreated	342,000	$ 349	$ 119,358,000	16%
Seasonal Shift Treated	156,000	$ 323	$ 50,388,000	7%
Seasonal Shift Untreated	88,000	$ 266	$ 23,408,000	3%
Seasonal Long-Term Treated		$ 290		
Seasonal Long-Term Untreated		$ 233		
Agricultural Treated	83,000	$ 294	$ 24,402,000	3%
Agricultural Untreated	14,000	$ 236	$ 3,304,000	0%
Subtotal	1,704,000		$ 660,911,000	89%
Total			$ 743,760,000	100%

3-2.5.3. *Potential Rate Structure Changes*

MWDSC's current rates reflect several advances made in restructuring the rates that were made to recognize differences in services that are required by the member agencies. Circumstances have continued to evolve that are warranting consideration of additional restructuring. The proposed restructuring was presented in the November 10, 2000, report. With the exception of the RTS charge and treatment surcharge, all of the current fixed and variable charges were modified.

3-2.5.3.1. Fixed Charges

- **Readiness-to-serve charge.** This charge recovers a portion of the cost of conveyance, distribution, and storage that is provided for emergency standby service.
- **Capacity reservation charge.** The charge recovers the cost of peak distribution system capacity. It is based on the cost of the amount of maximum day capacity requested by member agencies. By paying the fixed charge for the capacity it requests, the member agency reserves the capacity for peaking. If the member agency exceeds its reserved maximum day capacity during the May 1 through October 31 peak season, a Peaking Surcharge will apply (see below).
- **Tier 1 supply rate (contract).** Contract water will be MWDSC's most reliable supply, which member agencies will contract for a ten-year term for a maximum amount of 110% of the highest firm delivery during the ten years ending June 30,

2000. Contract amounts can be changed at any time through a transfer between willing parties. Agencies can also increase their initial contract amounts in collaboration with other agencies by requesting MWDSC to develop least-cost supplies. All agencies participating in supply expansion would pay the same incremental cost.

- **Growth charges.** Growth charges would be levied on agencies whose demand exceeds their initial Tier 1 contract amount. The charge is a one-time payment to recover a proportionate amount of the existing capital investment and is paid when yew supply deliveries are requested or required for annexations. A credit is received for payments of prior annexation charges.

3-2.5.3.2. *Variable Charges*

These volumetric charges would be the same regardless of location.

- **System access rate (SAR).** The charge recovers the cost of the conveyance and distribution system used for meeting average annual demands. The uniform volume charge would be paid by all member agencies receiving MWDSC water and for use of MWDSC's non-peak facilities for wheeling by member agencies or non-member third parties.
- **Water stewardship rate.** The charge recovers the cost of demand management programs such as conservation programs and the development of local resources. This uniform volume charge would apply the same as the SAR and thereby also supports wheeling.
- **System power rate.** The same uniform volume charge would be paid by all member agencies to recover the cost of pumping water through the State Water Project or Colorado River Aqueduct. Wheeling parties could supply their own power or pay MWDSC's actual cost.
- **Tier 2 supply rate (exchange pool).** Tier 2 water would be available in years of normal water supply and is intended for demands in excess of Tier 1 contract supplies. Agencies could choose to purchase Tier 2 water or use non-MWDSC local supplies. For agencies that consistently rely on Tier 2 water, thereby exceeding their maximum initial contract amount, a growth charge and supply development fee would apply as well.
- **Treatment surcharge.** This is the same charge as the current treatment surcharge. Interruptible customers would pay a portion of the treatment cost because of the reliability benefits received from having treated water for standby service.
- **Peaking surcharge.** A volumetric charge equal to three times the member agency's Capacity Reservation Charge, which is paid for peaking in excess of the member agency's maximum day capacity reserved by paying Capacity Reservation Charges.

- **Interruptible service agreements.** A volumetric charge for water for groundwater replenishment and agricultural customers, which will be supplied under contractual terms calling for interruptions during shortages.

Table 3-4 is a summary of the proposed rate changes. In addition to showing the proposed volumetric and fixed charges, this table indicates the amount of revenue that is projected for each charge, the costs that are being recovered, the unit costs, and the basis for levying the charge. The fixed charges will generate 44% of the rate revenue without including revenue from property taxes.

This further restructuring reflects "unbundling" of costs that are embedded in the current structure. This unbundling itemizes specific services that are currently blended into less specific charges, which allows MWDSC to charge customers in keeping with the principles contained in the Framework. **Figure 3-1** shows the relationship between the current and proposed rate structures, indicating how certain costs were aggregated into new rates. In some cases, costs that are recovered from volumetric charges have been shifted to fixed charges and vice versa.

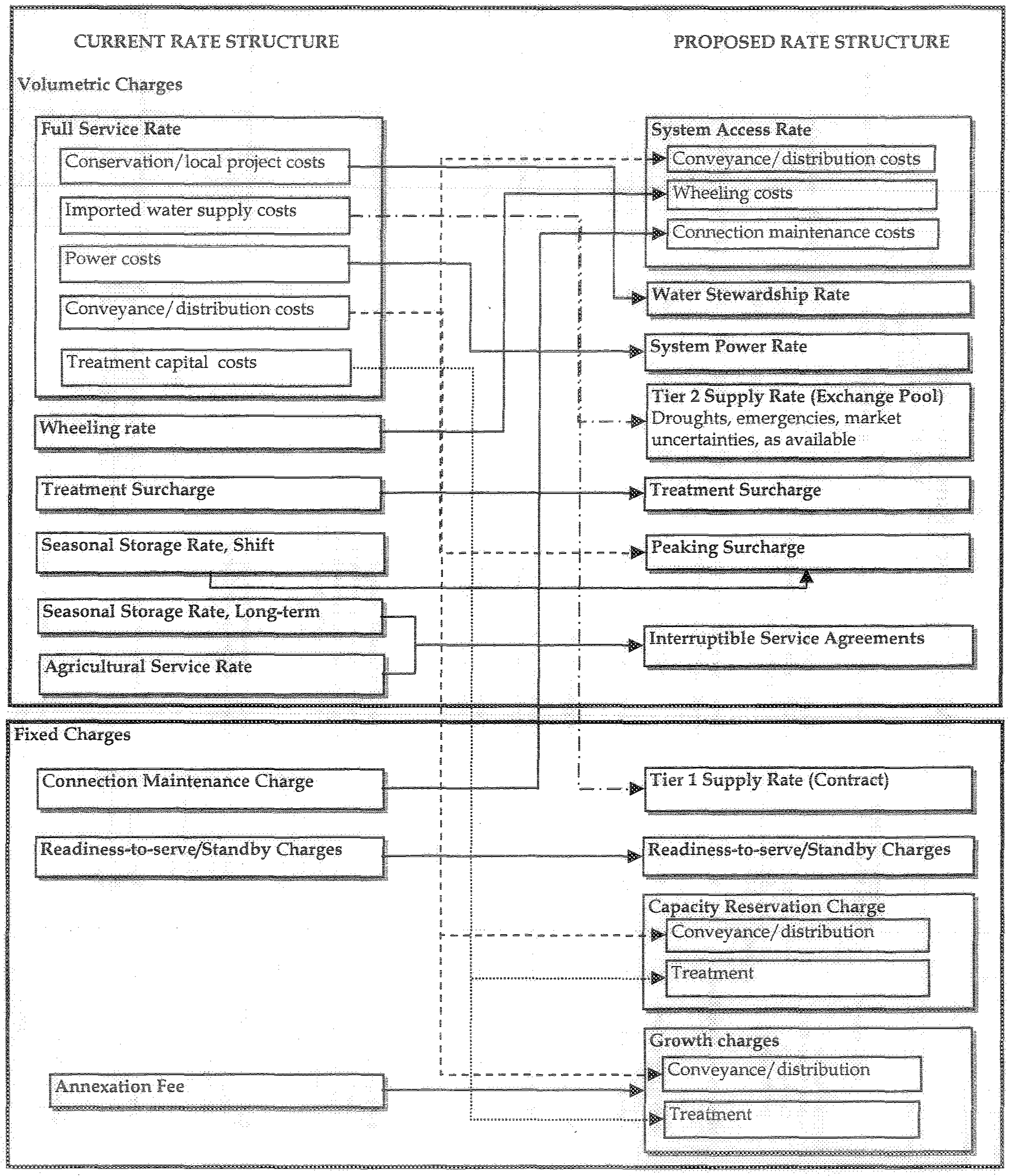
MWDSC compared the proposed rate structure with the current rate structure using the following set of objectives, which are similar to the Strategic Planning principles.

- **Accountability: cost of service approach.** Although the current rates are cost based, the derivation of proposed rates is more consistent with industry standards for cost allocation analysis.
- **Regional provider: meet public needs.** The current rates have a regional perspective but the proposed rates include a formula for needs-based supply allocation.
- **Financial integrity: fixed revenue.** Fixed revenue from proposed rates increases from 22% to 44%.
- **Environmental responsibility: conservation and local resource development.** Under the current rates, costs associated with environmental programs are embedded in the full-service rate and are thereby levied on all members. The proposed rates establish a separate stewardship charge, which is levied on all system users, member agencies, and third parties.
- **Supply certainty: known commitments.** Under the current rates, member agencies are able to purchase as much as they require with no minimum thresholds or maximum caps, although certain rates encourage shifting demand to off peak seasons. The proposed rates are dependent on contractual limits, allocation formulae, and pricing that clarify MWDSC's and the member agencies' respective supply and demand commitments.

Table 3-4
MWDSC Proposed Rate Structure

Rate Element	Revenue Requirement ($000,000s)	%	Cost Recovery Principle	Average Unit Costs ($/AF) Contracts (Tier 1)	Tier 2 (Exch Pool)	Interruptible Service Agrmts	Basis for Charge
Volumetric Rates							
System Access Rate			Capacity to meet average annual demands, net revenue from Growth Charges				For all water used by all member agencies
Conveyance	$179.0	21%					
Distribution	$68.0	8%					
Subtotal	$247.0	29%		$129	$129	$129	
Water Stewardship Rate	$42.0	5%	Conservation programs and development of local sources	$22	$22	$22	For all water used by all member agencies
System Power Rate	$83.0	10%	Pumping power	$43	$43	$43	For all water used by all member agencies
Treatment Surcharge	$103.0	12%	Treatment capacity and operations	$88	$88	$58	For all water used by all member agencies; interruptible contracts pay a portion for standby
Peaking Surcharge	Inc. in CRC		Peaking in excess of max day reserve				Three times the Capacity Reservation Charge
Tier 2 Supplies (Exchange Pool)			Investments in additional resources, credited pro rata to Tier 1 amounts	$0	$152	$25	For water used to meet demands during droughts emergencies, and market uncertainties, as available
Interruptible Service Agreement			For groundwater replenishment and agricultural customers				Similar to current interruptible rates
Subtotal - Volumetric Rates	$475.0	56%		$282	$434	$277	
Fixed Charges							
Readiness-to-serve			Portion of the cost of conveyance, distribution, and storage on standby for emergencies, net revenue from Growth Charges, standby charges, and property taxes				Ten-year rolling average of firm demands
Emergency storage	$67.0	8%					
Standby conveyance capacity	$65.0	8%					
Standby distribution capacity	$17.0	2%					
Standby treatment capacity	$0.0	0%					
Subtotal	$149.0	18%		$4	$4	$0	
Capacity Reservation Charge			Reserved maximum day peak capacity, net revenue from Growth Charges				$9,375/cfs of requested maximum day capacity
Conveyance	$0.0	0%					
Distribution	$43.0	5%					
Treatment	$0.0	0%					
Subtotal	$43.0	5%		$25	$25	$0	
Supply Contracts (Tier 1)	$176.0	21%	Fixed supply costs	$102	$0	$0	110% of highest firm delivery in last ten years
Subtotal - Fixed Charges	$368.0	44%		$131	$29	$0	
Total	$843.0	100%		$413	$463	$277	
Growth Charge							
Treated deliveries			Reimbursement to existing customers by new users for equity in existing capacity	$1,267			Unit cost of equity in existing system capacity paid at one time for capacity for growth
Untreated deliveries				$1,097			

Figure 3-1
Conversion from Current to Proposed MWDSC Rate Structure


CURRENT RATE STRUCTURE
PROPOSED RATE STRUCTURE
Volumetric Charges
Full Service Rate
Conservation/local project costs
Imported water supply costs
Power costs
Conveyance/distribution costs
Treatment capital costs
Wheeling rate
Treatment Surcharge
Seasonal Storage Rate, Shift
Seasonal Storage Rate, Long-term
Agricultural Service Rate
System Access Rate
Conveyance/distribution costs
Wheeling costs
Connection maintenance costs
Water Stewardship Rate
System Power Rate
Tier 2 Supply Rate (Exchange Pool)
Droughts, emergencies, market uncertainties, as available
Treatment Surcharge
Peaking Surcharge
Interruptible Service Agreements
Fixed Charges
Connection Maintenance Charge
Readiness-to-serve/Standby Charges
Annexation Fee
Tier 1 Supply Rate (Contract)
Readiness-to-serve/Standby Charges
Capacity Reservation Charge
Conveyance/distribution
Treatment
Growth charges
Conveyance/distribution
Treatment

- **Choice and competition: linkage between services and pricing.** The current rates bundle the costs of services in the full service rate. The proposed rates unbundle supply, conveyance, distribution, and power costs. The proposed rates also distinguish between contract and non-contract purchases, which allows hydrologic and market conditions to be reflected in pricing.
- **Water quality: source and treatment.** Both current and proposed rates support water quality.
- **Equity: fair cost allocations.** Both rates provide for wheeling, standby service, and equal treatment of customers, although the proposed rates are improved. The proposed rates explicitly allocate capacity costs for peaking and system expansion to separate charges.

3-2.6. Orange County Water District

The Orange County Water District (OCWD) supplies groundwater to more than 20 cities and water agencies. OCWD primarily recharges its groundwater basin with water from the Santa Ana River and to a lesser extent with imported water purchased from the MWDSC. Its rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Replenishment Assessment		
M&I		$107
Agricultural		$53
Basin Equity Assessment		$286 - $336

3-2.6.1. Cost of Service Objectives

The District's rate-making objective is to treat all of its customers equitably and fairly, to avoid any adjudication, and to keep its groundwater basin at safe levels. Its rates are set whereby the wholesale customers can pump up to 75% of their needs at the District's melded cost. The rate for pumping over 75% is linked to MWDSC's rates so that there is no economic benefit to pump OCWD's water instead of purchasing water from MWDSC. The range in the basin equity assessment is due to credits for local pumping costs.

The agricultural rate was established in the 1950s and is 50% of the M&I rate. Agricultural demand is only about 10,000 AF out of the 360,000 AF total.

3-2.6.2. Rate Structure Strengths and Weaknesses

The rate structure is currently achieving its objectives. The District is not adjudicated and in the last 25 years they have doubled their water production. Their rates are set to enable them to buy less expensive water from MWDSC when supply availability permits. The cost of replenishment water from MWDSC (currently $250/AF) is less than the basin equity assessment, so their costs for replacing water pumped in excess of the 75% threshold are covered.

The arbitrary reduction in agricultural rates poses no significant cost of service issues because agricultural demand is a small part of the total.

3-2.6.3. Potential Rate Structure Changes

The District recently considered converting to a tiered rate structure that would have added a third tier to the current two-tier structure. The first tier would apply to pumpage up 55 percent of the member agency's needs. This is the level of pumping that the District believes can be maintained through natural recharge and would be priced at the basic cost of basin operations. The second tier, from 55% to 75% of agency needs, would add the cost of replenishment water to the tier 1 base rate. The third tier would equal the District's current tier 2 rate, which is the alternative source of supply. These changes were not adopted and no other changes are anticipated in the near future.

3-2.7. Portland Bureau of Water Works

Portland provides treated water to retail City of Portland customers and its suburban, wholesale customers. Its rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Service charge, per meter per day	$0.12	
Commodity Rate		$241 - $366

3-2.7.1. Cost of Service Objectives

The Bureau's rate structure appears to be largely the result of long-term contracts established almost 25 years ago. This structure reflects the varying costs of capacity and transmission, pumping, and other operating expenses associated with its wholesale customer, which are located in four distinct service areas:

- **Service Area 1.** Water from supply conduits (nearest the source).
- **Service Area 2.** Water from gravity transmission (use a little more of the overall system).
- **Service Area 3.** Water from pumped system.
- **Service Area 5.** Water from Washington County Supply Line (special transmission line serving westside customers).

Some of the allocation is based on the cost for special facilities. For example, Service Area 3 customers are on a pumped system for all water, whereas Service Area 5 customers use pumps only for backup. Portland also shares in the pumping costs, which are allocated based on recent and forecasted demand. Most of the rates are related to the differences between service areas, but the current rates also reflect differences within the same service area based on summer peaking.

3-2.7.2. Rate Structure Strengths and Weaknesses

The strength of the current rate structure is that the majority of the revenue is derived from the variable, thereby promoting conservation, although the Bureau appears to have a reliable source of supply and is not under pressure to reduce consumption. Differences in fixed costs are reflected in the variable rates, so it appears that the cost allocations are equitable.

3-2.7.3. Potential Rate Structure Changes

Portland Water currently has fourteen 25-year agreements with cities and water districts, with earliest renewal at the end of 2004. They also have five private water companies (serving less than 1% of the wholesale customers) with 5-year agreements that will expire at the end of 2001. Portland Water expects to make some changes in its wholesale agreements, but the pricing methodology and rate structure are the subject of discussion.

3-2.8. San Diego County Water Authority

The Authority provides either treated or untreated water or both to 23 member agencies; of its total deliveries, more than half is untreated water. Its rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Infrastructure Access Charge, per EMU	$1	
Standby Water Availability Charge	$10	
Uniform Quantity Charge - treated		$521
Uniform Quantity Charge - untreated		$439

3-2.8.1. *Cost of Service Objectives*

The Authority determined that a new source of fixed revenue was needed to provide better coverage of their projected fixed expenditures, to better match their fixed and variable expenses with fixed and variable revenues, and to better reflect changes in the water industry in Southern California. Therefore, they have diversified their rates to include fixed components to reduce revenue variability. These fixed charges include an Infrastructure Access Charge (IAC) of $1 per household served, and a Standby Water Availability Charge of $10 per parcel or acre.

3-2.8.2. *Rate Structure Strengths and Weaknesses*

The current rate structure better matches the Authority's fixed and variable expenditures and revenues, and improves the reliability of the revenues. However, continuing changes in the water industry, specifically the probable shift in MWDSC's rate to more fixed charges, mean that the Authority will need to continue to adjust and refine its rate structure.

3-2.8.3. *Potential Rate Structure Changes*

The Authority is examining a variety of different rate structures to determine what will better serve its member agencies. These rate structures range from the "postage stamp" commodity rates that the Authority currently uses to incrementally separated services and costs that offer member agencies greater flexibility in choosing service options for water supply, transportation, and storage. The Authority may also consider establishing contractual deliveries for its member agencies, such as are being proposed by MWDSC.

3-2.9. San Francisco Public Utilities Commission

The San Francisco Public Utilities Commission (SFPUC) is responsible for providing water to retail customers in the City of San Francisco and 26 wholesale municipal and private water agencies located in San Mateo, Santa Clara, and Alameda Counties. Two-thirds of its water is delivered to the wholesale suburban customers. Its rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Monthly Service Charge, per EMU	$9 - $1,010	
Uniform Quantity Charge		$375

3-2.9.1. *Cost of Service Objectives*

The SFPUC is an example of a city that extended service to suburban customers who for many years were billed like in-city retail customers. Until the 1980s, the suburban wholesale rate consisted of service charges that were nominal compared to the quantity charges, which were based on decreasing rate blocks. The wholesale rate structure was changed to generate slightly more revenue from the service charges (up from 4% to 10% of total rate revenue). The decreasing block rate structure was converted to a uniform quantity charge.

3-2.9.2. *Rate Structure Strengths and Weaknesses*

The SFPUC and its suburban customers have been satisfied with the current rate structure until recently when system expansion have become an issue between growing and non-growing communities. The current rates, with a fixed charge that is based on service connection capacity, recovers some of the cost of capacity from customers in proportion to their capacity requirements, but not so much that differences between customers is significant. The fixed charges are viewed as token charges because they are so small compared to the total. When the rates were restructured in the 1980s and the fixed charges were increased, some agencies down-sized their connections to meet their needs.

As agencies have grown, they have increased the size of their connections, but it is not felt that the amount of the fixed charges approaches the cost of capacity. Although there is a specific methodology for determining the wholesale revenue requirement, there is no direct linkage between the fixed and variable cost components and the fixed and variable charges.

3-2.9.3. Potential Rate Structure Changes

The wholesale suburban customers have been aware of the differences that exist between the communities that are approaching build out and those that are still growing. There have also been concerns about peak day and peak hour demands, which at times have stressed the wholesale delivery facilities. Discussions have occurred regarding the installation of demand recording devices so that peak demand rates could be levied. Other than discussions, there have been no devices installed that would allow for charging peak demands.

The SFPUC is faced with a substantial capital improvement program related to both replacements as well as system expansion. It is expected that tiered pricing will be introduced in which a higher rate will be charged for growth-related capacity. This pricing may also take into account the increased costs of reliability for existing customers, as well as growth.

3-2.10. Seattle Water Department

The Seattle Water Department serves retail City of Seattle customers and wholesale suburban customers. Its rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Monthly Service Charge, per EMU	$54 - $1,236	
Peak demand (May 16 - Sept 15)		$510
Off-Peak demand (Sept 16 - May 15)		$335
Demand Charge (per 1,000 gal of deficient storage)	$22	
Growth charge		$274

3-2.10.1. Cost of Service Objectives

Seattle's wholesale rates are based on cost of service methods prescribed in its wholesale water supply contracts. The monthly service charges, which are based on the meter size of the wholesale customer, are a fixed cost that contributes a very small portion of the Department's total wholesale revenues.

Seattle has what they refer to as "peak" and "off-peak" commodity rates. In effect, these are really seasonal rates, with the peak season being May 16 to September 15. The peak season rate is based on a marginal cost framework; the off-peak rate is the amount needed to cover the remaining costs. There is more than a 50 percent difference between the off-peak and peak rates.

Along with the demand charge, these rates are intended to encourage cities to build their own storage supplies. The demand charge produced the desired result and now it is rare that any demand charges are charged.

The Department also has a variable rate growth charge that is intended to pay for expanding the capacity of the system as needed. The charge is levied against demand in excess of average demand in 1979 through 1981, when their wholesale contracts were signed. The charge is based on the cost of system expansion costs that have occurred since that time. The costs of expansion are allocated among the wholesale customers based on their shares of growth and converted into a volumetric charge that is applied to all sales.

3-2.10.2. Rate Structure Strengths and Weaknesses

The Department's rate structure has worked well in reducing peak summer demands. The Department does not appear to be struggling with fluctuations in its revenues, which can occur with a largely variable rate structure.

3-2.10.3. Potential Rate Structure Changes

There are currently no changes being considered.

3-2.11. Southern Nevada Water Authority

The Southern Nevada Water Authority has seven wholesale member agencies. It was established to address water supply on a regional basis, without regard for differences among individual purveyors. Its rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Uniform Quantity Charge		$157

3-2.11.1. *Cost of Service Objectives*

The Authority's ratemaking objective is to fully cover its expenses of operations. It does not attempt to send a water conservation message to its wholesale customers; instead, the member agencies can implement water conservation rates in their retail rate structures.

3-2.11.2. *Rate Structure Strengths and Weaknesses*

The strength of using a uniform rate is its simplicity and ease of implementation. The wholesale member agencies are given the greatest flexibility to structure their local retail rates according to local requirements without conflict with the regional wholesale rate structure.

3-2.11.3. *Potential Rate Structure Changes*

The Authority does not intend to change its wholesale water rate structure in the foreseeable future.

3-2.12. Zone 7 Water Agency

The Zone 7 Water Agency serves the Livermore-Amador Valley, which primarily includes the cities of Dublin, Livermore and Pleasanton. Zone 7 provides treated water from imported sources to its wholesale contract agencies and to a few "direct service" retail customers. 15% of its supply comes from groundwater pumped into the system from Zone 7 wells. Its contract agencies purchase treated water from Zone 7 and also pump groundwater. Its rates are summarized below.

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Monthly Service Charge, per account	$110	
Decreasing blocks (monthly use)		
0 - 33 hcf		$963
34 - 333 hcf		$771
334 - 3,333 hcf		$615
over 3,333 hcf		$539
Recharge fee		$354

3-2.12.1. Cost of Service Objectives

Zone 7's ratemaking objective is to provide sufficient quantities and quality of water to its customers and to cover all of its costs. The contract agencies agreed to pumping quotas in the 1960s when Zone 7 became a State Water Contractor so that Zone 7 would be able to sell sufficient water to cover its costs. None of the contract agencies has capacity committed to it in their contracts with Zone 7, however.

3-2.12.2. Rate Structure Strengths and Weaknesses

The rates cover all of the agencies' costs and the groundwater basin has been kept at acceptable levels. The monthly service charge is based on the cost of meter reading and billing and the decreasing block rates has no affect on the wholesale customers, virtually all of whose consumption occurs in the tail block. When the District was formed, there were a few direct retail customers. A decreasing block rate schedule was used to cover the extra cost of billing these customers and to discourage any other individuals from becoming direct retail customers.

The recharge fee is derived by taking Zone 7's average cost of water and subtracting the cost of treatment, which approximates the cost of untreated water. This approach is reasonable because Zone 7 uses its imported water to recharge the basin.

3-2.12.3. Potential Rate Structure Changes

The rate structure is achieving Zone 7's objectives. There are no rate structure changes planned at this time.

3-3. EVALUATION OF APPROACHES

3-3.1 Rate Structure Summary

The rate structures for the agencies surveyed are summarized in **Table 3-5. Table 3-5** lists the fixed and variable charges, the amount of rate revenue recovered from each charge, and further comments about the basis for the charge.

Table 3-5
Summary of Wholesale Rates

Type of Charge	Fixed Charges	Variable Rates ($/AF)	Percent of Rate Revenue	Comments
Contra Costa Water District				
Monthly Service Charge, per account	$112.59		1%	Per connection regardless of size.
Quantity Charge		$419	91%	For all water used.
Demand charges - recording meters				
Maximum day	$2.013/gpm		6%	Based on rolling 12-month average demand converted to a fixed charge.
Maximum hour	$1.680/gpm		2%	Based on rolling 12-month average demand converted to a fixed charge.
Demand charges - nonrecording meters				
Maximum month	$1.464/gpm		0%	Based on rolling 36-month average demand converted to a fixed charge.
Denver Board of Water				
Uniform Quantity Charge		$590	100%	For all treated water used by member agencies.
Greater Vancouver Water District				
Uniform Quantity Charge		$130	100%	For all potable water used by all member agencies.
MWD of Orange County				
Retail Meter Charge, per year	$3.30		50%	Per retail meter within the wholesale member agency.
Readiness-to-Serve Charge (MWDSC)	$22.71/AF			MWDSC pass-through, based on a rolling average demand converted to a fixed charge.
Quantity charge (MWDSC)		$431		MWDSC pass-through cost
Import Sales Increment		$4.75	50%	To cover MWDOC overhead.
MWD of Southern California (current)				
Readiness-to-serve Charge	Varies		11%	Based on rolling 3-year average demand converted to a fixed charge.
Connection Maintenance Charge	$50/cfs		0%	Based on capacity of service connection.
Full Service Rate - treated		$431	59%	For all water used by all member agencies.
Full Service Rate -untreated		$349	16%	For all water used by all member agencies.
Shift Seasonal Storage Service - trtd		$323	7%	For water taken in off-peak season for use during peak season.
Shift Seasonal Storage Service - untrtd		$266	3%	For water taken in off-peak season for use during peak season.
Long-term Seas. Stor. Service - trtd		$290	0%	For water stored in groundwater basins for over one year.
Long-term Seas. Stor. Service - untrtd		$233	0%	For water stored in groundwater basins for over one year.
Agricultural - treated		$294	3%	For agricultural customers.
Agricultural - untreated		$236	0%	For agricultural customers.
MWD of Southern California (proposed)				
Readiness-to-serve Charge	$4/AF		18%	Based on rolling 10-year average demand converted to a fixed charge.
Capacity Reservation Charge	$25/AF		5%	$9,375/cfs of requested maximum day capacity.
Supply Contracts (Tier 1)	$102/AF		21%	110% of highest firm delivery in last ten years.
Growth Charges ($/connection)				
Treated deliveries	$1,567			Unit cost of equity in existing system capacity paid at one time for capacity for growth.
Untreated deliveries	$1,097			
System Access Rate		$129	29%	For all water used by all member agencies.
Water Stewardship Rate		$22	5%	For all water used by all member agencies.
System Power Rate		$43	10%	For all water used by all member agencies.
Treatment Surcharge		$88	12%	For all water used by all member agencies; interruptible contracts pay a portion for standby benefits.
Peaking Surcharge		$75		3 times Capacity Reservation Charge.
Tier 2 Supplies (Exchange Pool)		$152		For water used to meet demands during droughts, emergencies, and maket uncertainties, as available.
Interruptible Service Agreements		Unspecified		Similar to current interruptible rates.

3-3.2. Structural Elements and the Cost of Service

A more general summary is contained in **Table 3-6**, which summarizes the rates structures according to the types of structural elements. **Table 3-6** indicates which of the fixed and variable structural elements each of the agencies has. The agencies have been ranked (from top to bottom) from those structures that are simplest to those that are more complex. The District has been included for purposes of comparison.

Table 3-5
Summary of Wholesale Rates (cont.)

Type of Charge	Fixed Charges	Variable Rates ($/AF)	Percent of Rate Revenue	Comments
Orange County Water District				
Replenishment Assessment				
M&I		$107	99%	For water used by all retail agencies up to 75% of needs.
Agricultural		$53	1%	50% of M&I rate.
Basin Equity Assessment		$286 - $336	0%	Surcharge on quantity charge for pumping in excess of 75% of Basin Production Percentage.
Portland Bureau of Water Works				
Service charge, per meter per day	$0.12		<1%	Per meter regardless of size
Commodity Rate		$241 - $366	100%	Varies depending on location (T&D and pumping differentials).
San Diego County Water Authority				
Infrastructure Access Charge, per EMU	$1		4%	Per equivalent meter unit
Standby Water Availability Charge	$10		5%	Demand charge per acre or parcel.
Uniform Quantity Charge - treated		$521	91%	Pass-through of MWDSC's $431 charge. SDCWA adds $90.
Uniform Quantity Charge - untreated		$439	"	Pass-through of MWD's $349 charge. SDCWA adds $90.
San Francisco Public Utilities Commission				
Monthly Service Charge, per EMU	$9 - $1,010		10%	Per equivalent meter unit
Uniform Quantity Charge		$375	90%	Charge for water delivered based on one-month meter readings.
Santa Clara Valley Water District				
Basic user charge				Applies to groundwater, untreated surface water, and treated water.
M&I		$310 and $115	90%	North County and South County, respectively.
Agricultural		$31 and $11.50	<1%	North County and South County, respectively. 10% of M&I basic user charge.
Treated water surcharge				
Contract water		$70	7%	Added to basic user charge.
Non-contract water		$0	0%	Can vary from $0 to as much as contract water surcharge.
Water master surcharge		$11.75	<1%	Added to untreated surface water only.
Recycled water		$80 and $20	<1%	M&I and agricultural, respectively.
Seattle Water Department				
Monthly Service Charge, per EMU	$54 - $1,236		5%	Varies from 1" to 24" meter sizes.
Peak demand (May 16 - Sept 15)		$510	82%	Seasonal differential intended to reduce summer consumption.
Off-Peak demand (Sept 16 - May 15)		$335	"	
Demand Charge (per 1,000 gal of deficient storage)	$22		<1%	Based on an hourly peaking of 30% of the average daily use. Intended to encourage cities to build their own storage supplies.
Growth charge		$274	13%	Intended to pay for expanded facility capacities.
So. Nevada Water Authority				
Uniform Quantity Charge		$157	100%	Uniform rate for all water delivered.
Zone 7 Water Agency				
Monthly Service Charge, per account	$110		1%	Per metered service regardless of size.
Decreasing blocks (monthly use)				
0 - 33 hcf		$963	0%	For metered water in tier.
34 - 333 hcf		$771	0%	For metered water in tier.
334 - 3,333 hcf		$615	0%	For metered water in tier.
over 3,333 hcf		$539	99%	For all other metered water.
Recharge fee		$354	0%	For water pumped in excess of Groundwater Pumping Quota.

Clearly, the ranking is judgmental and the relative standing among agencies is debatable, but the overall standing of these agencies is reasonably accurate.

There are general as well as agency-specific cost of service issues associated with each element and with combinations of elements.

Table 3-5
Summary of Wholesale Rates (cont.)

Type of Charge	Fixed Charges	Variable Rates ($/AF)	Percent of Rate Revenue	Comments
Orange County Water District				
Replenishment Assessment				
M&I		$107	99%	For water used by all retail agencies up to 75% of needs.
Agricultural		$53	1%	50% of M&I rate.
Basin Equity Assessment		$286 - $336	0%	Surcharge on quantity charge for pumping in excess of 75% of Basin Production Percentage.
Portland Bureau of Water Works				
Service charge, per meter per day	$0.12		<1%	Per meter regardless of size
Commodity Rate		$241 - $366	100%	Varies depending on location (T&D and pumping differentials).
San Diego County Water Authority				
Infrastructure Access Charge, per EMU	$1		4%	Per equivalent meter unit
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Uniform Quantity Charge - treated		$521	91%	Pass-through of MWDSC's $431 charge. SDCWA adds $90
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San Francisco Public Utilities Commission				
Monthly Service Charge, per EMU	$9 - $1,010		10%	Per equivalent meter unit
Uniform Quantity Charge		$375	90%	Charge for water delivered based on one-month meter readings.
Santa Clara Valley Water District				
Basic user charge				Applies to groundwater, untreated surface water, and treated water.
M&I		$310 and $115	90%	North County and South County, respectively.
Agricultural		$31 and $11.50	<1%	North County and South County, respectively. 10% of M&I basic user charge.
Treated water surcharge				
Contract water		$70	7%	Added to basic user charge.
Non-contract water		$0	0%	Can vary from $0 to as much as contract water surcharge.
Water master surcharge		$11.75	<1%	Added to untreated surface water only.
Recycled water		$80 and $20	<1%	M&I and agricultural, respectively.
Seattle Water Department				
Monthly Service Charge, per EMU	$54 - $1,236		5%	Varies from 1" to 24" meter sizes.
Peak demand (May 16 - Sept 15)		$510	82%	Seasonal differential intended to reduce summer consumption.
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Demand Charge (per 1,000 gal of deficient storage)	$22		<1%	Based on an hourly peaking of 30% of the average daily use. Intended to encourage cities to build their own storage supplies.
Growth charge		$274	13%	Intended to pay for expanded facility capacities.
So. Nevada Water Authority				
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Zone 7 Water Agency				
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Decreasing blocks (monthly use)				
0 - 33 hcf		$963	0%	For metered water in tier.
34 - 333 hcf		$771	0%	For metered water in tier.
334 - 3,333 hcf		$615	0%	For metered water in tier.
over 3,333 hcf		$539	99%	For all other metered water.
Recharge fee		$354	0%	For water pumped in excess of Groundwater Pumping Quota.

Clearly, the ranking is judgmental and the relative standing among agencies is debatable, but the overall standing of these agencies is reasonably accurate.

There are general as well as agency-specific cost of service issues associated with each element and with combinations of elements.

Table 3-6
Summary of Wholesale Rate Structure Elements
(Agencies Ranked in Increasing Order of Complexity)

	Fixed Charges				Variable Charges					
Wholesale Water Agency	**Connection Capacity**	**Per Account**	**Per Acre or Parcel**	**Peak Demand**	**Uniform**	**Tiered**	**Seasonal**	**Peak Demand**	**By Location**	**Type of Use**
Denver Board of Water		No fixed charges			▨					
Greater Vancouver Water District		No fixed charges			▨					
Southern Nevada Water Authority		No fixed charges			▨					
Orange County Water District		No fixed charges			▨			▨		▨
Santa Clara Valley Water District		No fixed charges			▨				▨	▨
San Francisco Public Utilities Commission	▨				▨					
Municipal Water District of Orange County	▨				▨					
Portland Bureau of Water Works		▨			▨				▨	
San Diego County Water Authority	▨		▨		▨					▨
Zone 7 Water Agency		▨				▨		▨		
Seattle Water Department	▨			▨			▨			
Contra Costa Water District		▨		▨	▨					
Metropolitan Water District of Southern California										
Current structure	▨		▨	▨	▨		▨			▨
Proposed structure	▨		▨	▨		▨		▨		▨

3-3.2.1. *Fixed Charges*

Fixed charges typically recover a small portion of the agencies' fixed costs, which are the majority of the costs. Charges per connection size or per account are recovering at least the cost of meter reading, meter maintenance, and customer billing and may also be recovering a portion of the capital cost. When significant capital cost recovery occur, the charge may be related to the amount of capacity used (based on historic or projected demand) instead of on the size of the connection. In this case, there may also be contractual requirements stipulating charges for additional capacity or for peaking. Agencies with fixed peak charges are regarded as having the most complex rates. Per acre or per parcel charges were only seen within the Metropolitan Water District of Southern California's service area, where they were established as one of the original funding mechanisms. Otherwise, such charges are uncommon.

The cost of service issues associated with fixed charges are fundamental to rate design. How much revenue, if any, is recovered by these agencies from their fixed charges varies considerably. From the purchaser's perspective, the preference may be as little as possible. However, when there is potential for some customers to shift their loads, customers without that option may be vulnerable to paying a higher portion of fixed costs through variable charges, and may prefer a fixed charge, particularly if it is reasonably related to fixed costs.

Not all agencies, including the District have fixed charges. In three cases, Denver, Greater Vancouver, and Southern Nevada, the agencies have only uniform quantity charges. As result, no cost allocations are required for setting their current rates, which is not to say that these agencies have no rate design or cost of service issues.

Two of the agencies, Orange County and the District, have no fixed charges but have multiple variable charges, and therefore require cost allocations in setting their rates.

3-3.2.2. *Variable Charges*

Variable charges recover a majority of most water agencies' costs, typically far exceeding the variable costs. The cost of service issues related to variable charges deal, first, with the relationship between fixed and variable costs, and, second, with the differences among customers related to peaking, location served, and type of service or water use.

The most common form of variable charge among wholesale water agencies is a uniform volumetric charge, which all but two of the agencies surveyed have. Tiered volume charges are uncommon because they are difficult to design where one set of tiers fits all sizes of purchaser. This is not to say that they are not being explored as a means for managing demands and providing incentives. Seasonal rates and peak demand charges are employed when time-of-use affects the availability of facility capacity. Variable charges that differ by location are usually employed when there are geographically distinct zones.

Uniform volume charges are generally set by the agencies surveyed following some form of proportional allocation. Of the time-differentiated volume charges, Seattle sets its seasonal rate based on the marginal cost for the summer rate, with the difference made up by the winter rate. MWDSC's seasonal rates are discounted to encourage off-peak use and storage.

The volumetric peak demand charges are found with the two other agencies in the survey that also provide groundwater. In their cases, the charge is related to managing the groundwater basin. In MWDSC's case, the peak demand charge in its proposed rates would be linked to purchases in excess of contract amounts.

In several of these cases, cost of service allocations may be combined with policy to achieve a fair effect. This is most common where the type of use is recognized in rate making by the agencies surveyed. Type of use rate making considerations apply to agricultural and interruptible service. These rates are typically steeply discounted for agricultural customers, whose use of the water does not produce the benefits received by M&I customers. Interruptible rates are also discounted in return for the willingness to discontinue service during emergencies.

3-3.2.3. Agencies with Variable Charges Only

Three agencies, Denver, Greater Vancouver, and Southern Nevada, have rates that consist of uniform quantity charges only. With these agencies, the simplicity of their rate structures stems from their missions, which is to serve as a bulk supplier of water that is available to all member agencies regardless of any differences among them. Denver's rates are the result of negotiation with its wholesale customers. Greater Vancouver has recently examined whether seasonal rates should be considered to attenuate peaks, a study that was requested by its wholesale customers that are concerned with the varying demands placed on the system by customers. Southern Nevada does not anticipate changing its wholesale rate structure. In each case, the member agencies use their retail rate structures as they deem appropriate to account for difference among rate payers. Given the simplicity of their rate structures, cost of service allocations are not required.

The next agency in this group, Orange County, differs from the other agencies surveyed because it provides only groundwater basin recharge and management services. It has rates that are cost-based, uniform volume charges for all water pumped, which, from a cost of service standpoint is not more complicated than Greater Vancouver's or Southern Nevada's rate structures. However, Orange County's structure illustrates where the strict application of cost of service analysis ends and resource management policy begins. For water pumped in excess of 75% of the member agency's total demands, a surcharge is applied based on the cost of MWDSC water. Agencies are therefore encouraged not to pump beyond a certain amount, beyond which they pay the same as the cost of imported replenishment water.

3-3.2.4. Agencies with Fixed and Variable Charges

When both fixed and variable charges occur in a rate structure, cost of service issues are more pronounced. The fundamental issue concerns the correspondence between fixed costs and fixed charges. Water agencies' costs are 70% fixed or greater, but fixed charges are rarely set that high. When agencies set their fixed charges, they typically must determine how much of their fixed costs they will recover from variable charges.

Table 3-2 indicates that revenue from variable charges, as opposed to fixed charges and other non-operating revenues, is generally 80% or more, which is the inverse of how much of the agencies' costs are variable. As a result of the heavy reliance on revenue from variable sources, wholesale agencies' revenues are subject to fluctuation, which can occur because of climatic influences and decisions made by individual member agencies as to which supply option to use. With the potential for wheeling in today's water market, some wholesale agencies have become more vulnerable to load shifting by individual customers, causing them to study rate structures that recover more revenue from fixed charges.

Of those agencies that have both fixed and variable charges, San Francisco's rate structure is one of the simplest, with a set of fixed charges based on equivalent meter sizes and a uniform volume charge. There is no cost basis for the amount of revenue that is recovered from its fixed charge. It has historically been deemed a reasonable amount in normal years of supply, given the relative stability of its revenue from its variable charge. During periods of rationing, however, when customer purchases were curtailed, large swings in the variable charge occurred to maintain revenue neutrality.

MWDOC's rates are also comparatively simple. Its costs are allocated based on measures of benefit that are deemed fair by the member agencies. About half is recovered from a fixed charge that is related to the size of the wholesale agency and the other half is surcharged on MWDSC's volume charge. Because MWDOC has no facilities, there are no cost of service issues related to allocating operating and capital costs.

Portland's comparatively simple rates consist of a nominal charge per account and uniform quantity charges that are differentiated by location. The fixed charge was larger until recently, when it was reduced to an amount that is less than the costs of meter reading and billing. For all intents and purposes, Portland's expenses are covered by its variable, uniform charge. Portland is the only one of the agencies surveyed that uses a "railroad ticket" cost of service approach. Operating and capital costs for all functions are allocated in proportion to use based on which facilities are used.

San Diego's fixed charges are in part a function of the wholesale rates it pays MWDSC and passes through to its member agencies. Like MWDOC, it also has a fixed charge that is related to the service connection capacity of its member agencies' retail customers. As a result of property-based revenue, San Diego receives the majority of its revenue from fixed revenue sources; however, of the rate revenue it receives, the majority comes from variable charges (**Table 3-5**). The cost of service analysis required to set its treated and untreated volume charges is comparable to an agency like Denver.

Zone 7's rate structure is unusual in certain respects but shares features with other wholesale agencies. Its fixed charge per account is simple, though less common for a wholesale water agency. Its volume charges are an unusual combination of nominal decreasing block rates and a surcharge for excess pumping. There is no cost basis for the decreasing block rate structure, other than it generates the required revenue. The size of the blocks and the rate per block are intended to discourage individual retail customers from requesting service. The recharge fee is different from Orange County's rates. Orange County's charge for excess pumping is linked to the alternative source. Zone 7's is based on the cost of replenishment water.

As one of the four cities in this survey that supplies wholesale water to suburban customers, Seattle's rates are the most sophisticated. Seattle's rate structure is a combination of traditional and innovative elements. Its fixed service charges are conventional and designed to recover the costs of meter reading, billing, and maintenance. Its demand charge was designed to encourage member agencies to construct local storage, which was successful. Its seasonal rates do not allocate peak system costs to customers in proportion to their peak season demands, *per se*. Instead, the peak rate is set using marginal costs and the off-peak rate makes up the remainder.

Contra Costa's rates are well suited to a wholesale agency with six wholesale customers. With that many wholesale customers, it has been possible for Contra Costa to meter and bill its customers based on peak day and peak hour demands (or in some cases on peak month demand). It charges a monthly charge per account for the cost of monitoring peak flows and billing appropriately. Like Seattle and MWDSC, Contra Costa's peak charges are based on flows that are converted to fixed charges. The fixed and variable charges are determined based on cost allocations that conform strictly with the cost of service.

MWDSC's current rates have become more sophisticated in response to an awareness of widening differences among its member agencies. Its proposed rates, although not adopted, indicate additional changes are still required to address all of the member agencies' concerns. Both the current and proposed rates are structured to recover more fixed costs from fixed charges. In the proposed structure, variable costs have been disaggregated to accommodate wheeling.
In order for MWDSC's rates to function, it will be necessary for the member agencies to make commitments for their system capacity requirements, which indicates that MWDSC is no longer able to provide for open-ended demands by its member agencies, which may exercise supply options to the detriment of others.

Cost of service allocations are used to determine most of MWDSC's charges. However, under the proposed rates, the peaking surcharge is set as a punitive deterrent to peaking, without a direct correlation to costs.

3-4. COMPARISON WITH OTHER AGENCIES

Wholesale rate structures range from simple to complex. Not surprisingly, the trend is toward more complex structures in response to widening differences among customers that historically were a more homogeneous class. Some agencies that could be affected by wheeling are considering methods distributing the risk by either entering into contractual commitments for capacity with their member agencies, increasing the amount of revenue recovered from fixed charges, or both. Where previously fewer charges were required, agencies are creating separate charges for separate costs so that member agencies can be charged for the specific services they require.

3-4.1. Comparison of SCVWD with Other Agencies Surveyed

The District serves wholesale municipal customers and retail agricultural customers, as well as numerous direct serve customers. Its rates are summarized below:

Type of Charge	Fixed Charges	Variable Rates ($/AF)
Basic user charge		
M&I		$310 and $115
Agricultural		$31 and $11.50
Treated water surcharge		
Contract water		$70
Non-contract water		$0
Water master surcharge		$11.75
Recycled water		$80 and $20

By comparison with the other agencies in this survey that only charge variable charges, the Santa Clara Valley Water District's rates are significantly more complex. The District's variable charges are also comparatively complex. There are reasons for this complexity:

- The District provides groundwater and surface water, which are managed conjunctively. Most wholesale agencies do not provide both groundwater and treated water and do not have to manage customer load shifting.
- The District serves what have historically been significantly different geographic zones, which has led to railroad ticket pricing. With the exception of Portland, which also has operationally distinct zones, "postage stamp" pricing is the more common form of setting rates among the agencies surveyed.

- The District has significant use by agricultural and M&I customers, although the proportion of agricultural demand is gradually shifting. Most other wholesale agencies have relatively little agricultural demand, whose supply reliability, capacity requirements for growth, peaking characteristics, and water quality requirements are markedly different from M&I customers.
- The District is legally constrained as to the maximum it can charge agricultural customers, a constraint that has no cost basis.

With this complexity, the District has historically set its rates to achieve full cost recovery while balancing Board policy objectives that impose limits on its ability to rely on strict cost of service principles. The key variables involved in this balancing process that depart from strict cost of service allocations are:

- The rate differential between agricultural and M&I rates.
- The rate differential between zones.
- The rate differential between contract and non-contract treated water.

The District is not alone in setting rates that are not strictly cost based. The agencies in this survey have exercised discretion in setting several charges such as:

- Fixed charges related to capacity, such as certain service charges based on equivalent meter units or connection size. These charges typically cover only a portion of the fixed costs associated with capacity. This is more often the case with wholesale than retail water agencies because wholesale connections frequently include standby connections.
- Surcharges for excess peaking or groundwater pumpage, which may instead be based on the cost of alternative supplies or may be purely punitive.

Limits exist on the extent to which the cost of service can be applied, beyond which judgment applies. The typical conditions that limit the strict application of cost of service allocations are related to policies that balance financial, rate payer equity, resource management, and legal objectives.

4. DATA MANAGEMENT IMPROVEMENTS

4. DATA MANAGEMENT IMPROVEMENTS

4-1. INTRODUCTION

4-1.1. Scope and Purpose

The scope of this section is to provide the District with potential approaches to improving its management of cost of service and cost recovery data (i.e., accounting data required to determine revenue requirements and operational data required to allocate costs and calculate rates). The purpose of this information will be to improve the District's ability to identify costs at all points of delivery.

4-1.2. Basis for Evaluation

Our comments on data management are based on over 20 years of experience with setting rates for water and wastewater agencies. These agencies run the full spectrum in size from large regional systems serving retail agencies, like the District, to small systems of less than 100 accounts. They include both municipal (special districts and cities) and investor-owned systems. They also include agencies located in many states, as well as internationally. Every attempt has been made to evaluate the District's data management by comparison with similar agencies and taking into account prospective, as well as recent developments in the industry.

4-2. CURRENT DATA MANAGEMENT PRACTICES

4-2.1. Data Requirements for Cost of Service Modeling

While conducting the cost of service analysis, we had limited involvement with the District's data management systems. Most of the cost and operational data used in the cost of service analysis was readily available. If the District's data were not already well managed, greater effort would have been required on our part to work with source data.

It was possible for us to develop the cost of service model based on data found in readily available sources for the most part. **Figure 4-1** is a diagram of the cost of service model and the data inputs. The cost of service model was driven almost exclusively by proportional allocations. In other words, costs were attributed to services and were allocated in proportion to the use of the services. Other allocations could have been made, for example, that require greater levels of cost accounting and engineering detail for point-to-point allocations.

Figure 4-1
Data Input Sources

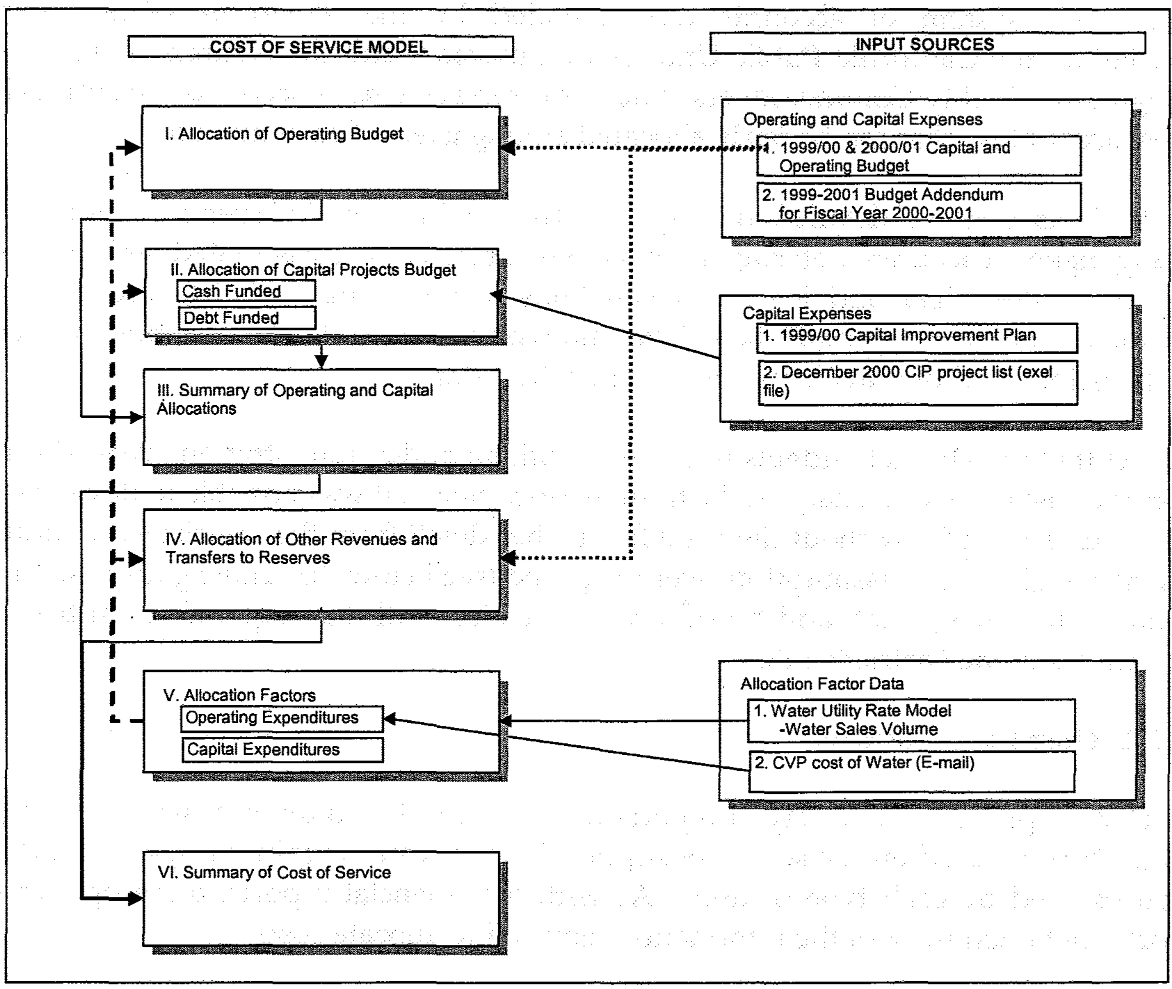
COST OF SERVICE MODEL
INPUT SOURCES
I. Allocation of Operating Budget
Operating and Capital Expenses
1. 1999/00 & 2000/01 Capital and Operating Budget
2. 1999-2001 Budget Addendum for Fiscal Year 2000-2001
II. Allocation of Capital Projects Budget
Cash Funded
Debt Funded
Capital Expenses
1. 1999/00 Capital Improvement Plan
2. December 2000 CIP project list (exel file)
III. Summary of Operating and Capital Allocations
IV. Allocation of Other Revenues and Transfers to Reserves
V. Allocation Factors
Operating Expenditures
Capital Expenditures
Allocation Factor Data
1. Water Utility Rate Model -Water Sales Volume
2. CVP cost of Water (E-mail)
VI. Summary of Cost of Service

Figure 1 indicates the sources of data for each the various components of the cost of service model. These sources comprise public and internal documents produced by the District. They represent a relatively few number of documents, without which it would have been necessary for us to develop the data from the appropriate departmental source.

4-2.1.1. Financial Reports

The documents containing the operating and capital expenses are high-quality publications. The District has received the Government Finance Officers Association's Distinguished Budget Presentation Award for them. They are not only excellent budget documents but also contain considerable additional documentation that is relevant to rate making. For example, the chart of accounts conforms with the "functional" system of accounts recommended by the American Water Works Association, the California Public Utilities Commission, and the National Association of Regulatory Utility Commissioners. Such uniform systems of accounts are conducive to cost accounting that can be fairly allocated among users of each function.

The budgets contain detailed descriptions from which an independent party can usually make an accurate determination as to what function is associated with the cost. In setting rates, clear and logical explanations of the sources of data are essential documentation, and the published detail allowed for accurate classifications of costs for allocations without much assistance for District staff.

The fact that the District budgets biennially, with an addendum after one year, did not affect the cost of service analysis. With these documents, it was possible to develop the cost of service model without the need for further detail from the District's accounting staff, although certain assumptions were required (see below) to bridge gaps in data. It is likely, however, that additional account codes will be required to introduce refinements in the District's rates.

4-2.1.2. Operations Reports

The District produces a variety of reports that identify the volumes of water managed by the District based on the source of supply, flow of water within the system, and the amounts used by each type of user. As with the financial reports, these operations reports contained most of the information required to allocate costs.

The most useful report for deriving the allocation factors in the cost of service model was the Water Utility Rate Model. This spreadsheet analysis contained recent and projected water sales volumes for each of the District's types of water service, itemized by zone. The report also contains supplemental information not shown in the budgets related to long-term financial projections. Transfers, reserve fund balances, revenues from available sources are also shown in this report. Although it does not figure directly into the cost of service model, this supplemental information served as useful context.

The allocation factors were developed based on proportions of water use or imports with one exception. The allocation of the cost of Central Valley Project water was based on the cost paid by the District to the CVP, rather than on volumes of water used, because the District pays different amounts for M&I and agricultural water.

The District has also analyzed its operations by reach as part of its recent debt issuance. This analysis indicates the flow of water from the various sources of supply throughout the system of transmission and distribution pipelines, pump stations, and treatment plants. With this analysis, the District determined the relative uses of its facilities by public versus private agencies. The cost of service analysis in this report allocated costs between the District's north and south County zones, but did not allocate costs to different reaches of the system. For these allocations, data were required to segregate costs and water volumes by zone, but not by reach.

4-2.2. Comparison with Other Agencies

Large wholesale agencies have historically had simpler rate structures consisting of at least uniform quantity charges. This practice is in keeping with the mission to supply a comparatively homogeneous customer base with bulk water. The differences among wholesale customers were slight and complex rates were not warranted. Wholesale rates have become more complex as the differences among wholesale customers in other areas have become more pronounced..

The District's budgets compare very favorably with other agencies in the areas of reporting operating and capital expenses and in describing its reserve policies, which are all essential budgetary documentation. The presentation of the District's transfers, other sources of revenue, which are crucial for rate making is not as explicit, which is to be expected in budgets. For rate-making purposes, transfers to and from reserves and offsets from non-operating sources of revenue need to be netted against the operating and capital expenses to determine the revenue requirement. Typically, this form of presentation is only seen when agencies prepare specific rate analyses.

The District's rate model is the best source of this latter data. This model presents the revenue requirements and revenue projections and constitutes what is sometimes considered a financial plan, as opposed to a rate model (which would include cost allocations). We note that the rate model tracks reserve fund balances. Of particular note is the manner in which surpluses are handled. As we understand it, surpluses from operations are transferred to the capital reserve. The combinations of these "balancing" transfers plus planned transfers maintain the capital reserve at acceptable levels.

With districts that consist of member agencies (as opposed to situations in which a city provides wholesale service to suburban customers), it is common that surpluses are treated the way the District does as a transfer to reserves. Any surplus is retained within the water fund's reserves and held for future purposes (e.g., capital projects, rate stabilization).

The District's Performance Audit commented on "embedded contingencies" in the Budget, which result in over estimates in certain cases. Whether or not this has any ultimate detrimental affects was not discussed. If budgets are over estimated, the surplus is retained in the capital reserve and is therefore available in the future, presumably reducing the need to increase rates. We are aware of two agencies that have different practices for dealing with budget surpluses, which we will briefly describe.

- **Union Sanitary District.** This district apparently patterned its approach after the City of Sunnyvale. Budget surpluses are retained at three levels: rate payers, district-wide, and departmental. Each department's surplus is apportioned to each level and is treated as a source of revenue in future years. The surpluses are viewed as savings that are available at each level either for reducing rates, for funding district-wide programs that are under funded, or as a credit toward future departmental budgets. At the department level, budgets can afford to be as lean as possible when there is a credit that can be applied toward a deficit, if it should occur. The District has noticed that over budgeting has gradually been reduced.
- **City of Santa Rosa.** The City's water and sewer budgets (as well as other branches of city services) contain an item referred to as "budget kickback." This amount is a few percent of the total and is based on the City's experience with budget surpluses. Its budgets are based on full budgets, but its rates are based on budgets minus a few percent to reflect the fact that over budgeting occurs. This adjustment stems from criticism from residents who were unhappy paying rates based on budgets that were known to be chronically on the high side.

The approach the District uses to account for budget surpluses is simple, pragmatic, and compares well with the industry. The District tracks and projects the surplus in the rate model as an internal analytical tool for supporting management decision making. This is also true of the variances between water forecasts and actual purchases. If the District under estimates the coming year's water purchases, rates will be higher, and revenue will be higher. The resulting surplus is transferred to reserves, where again it is available for future needs. Again, the practical impact of over or under estimates may not be great because the problem is self-correcting on a long-term, cumulative basis.

The rate model is closer to the source data (particularly operational data) and was relied on heavily for developing the allocation factors in cost of service model in this report. We did not have to develop the costs or flow data from source data so we are unable to comment on how readily this can be done.

The District's circumstances are currently comparatively simple compared with other wholesale agencies with more complex rate structures and supporting cost allocation methodologies. The District's data management systems are commensurate with its current circumstances and appear to be robust enough for potential adjustments.

4-3. POTENTIAL REFINEMENTS

The District's present budgetary and modeling documents provide the cost and flow data required to set its current rates. There may be refinements that could be made in producing these documents. However, we needed very little additional data in preparing the cost of service model and did not need to research the source documents and records that serve as the support for the budgets and operations reports.

If the District changed its rates, refinements in its accounting data would probably be required, depending on the nature of the change and the type of cost of service analysis needed to derive the rates.

4-3.1. Alternative Rates and Charges for Cost Recovery

The District's current rates pool the majority of costs, differentiating between zone and separately identifying the costs of treatment. The resulting rates recover the District's costs exclusively through volumetric charges.

4-3.1.1. Structural Changes

The District could change its rate structure in a number of ways. For example, fixed charges could be introduced, such as:

- Fixed charges per account to recover the costs of meter reading, meter maintenance, billing, and related customer service functions. The District has many individual accounts in addition to its major wholesale accounts. These individual accounts require a disproportionate amount of time to bill compared with the volumes of water used. Overall, such a fixed charge would probably recover only a few percent of the District's total costs, but would distribute customer account costs more equitably.

- Fixed charges to recover the costs of capacity associated with each customer's connection. Such a charge could recover a significant portion of the District's costs. Introducing fixed charges to recover capacity costs raises a number of rate-making questions that extend beyond improved cost allocations.
- Direct charges levied on customers for specific administrative or field services.

Introducing fixed charges would require the District to aggregate the related costs to facilitate calculating the charge. Presumably the District maintains these data for purposes of developing budgets; if not, the District would need to establish the necessary cost codes.

Variable charges based on volumes of water would allow the District to proportion costs differently. The data already exist for the most part to allow the District to develop rates based on the cost of service analysis in this report. Potential variable charges include:

- Volumetric rates for each commodity similar to those in the unpooled cost model.
- Volumetric rates with surcharges for each service similar to those in the pooled cost model.

Finer gradations of cost and flow data could be developed to determine "point-to-point" charges for each customer, such as was done in the District's analysis of public versus private uses of the facilities. In Portland's case, its facilities can be segregated into distinct operational zones, which is conducive to deriving point-to-point charges. In the point-to-point approach to setting charges, both fixed and variable charges could be developed for purchased water costs, storage, pumping, transmission and distribution, and treatment.

The point-to-point approach to developing charges can also be used for establishing wheeling rates. MWDSC is the best example of an ensemble of fixed and variable charges that is intended to support wheeling charges, although the specific wheeling charge has not been settled definitively.

4-3.1.2. Managing Data for Future Rates

The types of alternative rates and charges that could be employed could require finer gradations of cost data by function, by service, and by reach or zone and flow and capacity data by individual customer. Some of the charges could be developed from existing accounting data and customer billing records, which would need to be configured to perform the necessary allocations. For example, capacity related costs (e.g., cash-funded and debt-funded capital improvements) could be categorized for allocation among customers based on average annual or peak demands (e.g., peak season, peak day, peak hour). Capacity related costs can be allocated based on historic purchases, projected short-term purchases, or long-term purchases, the latter of which might require contractual commitments by customers.

Allocations in the cost of service model in this report were based on assumptions in a specific case. As noted in Section 2, the cost of groundwater recharge is not separately accounted for in the District's budget. If a separate cost code for this function was added, a surcharge for groundwater could be derived, as illustrated in the pooled cost model.

The District's specific interest in determining the cost of service at every point of delivery may currently be feasible. Based on what we observed of the District's budgets, it appears that the District's cost accounting structure budgets portions of operations, maintenance, and capital costs by reach. Although we did not study the District's public versus private analysis in detail, the District also appears to maintain sufficient flow data by reach for allocating costs. If the District were to develop point-to-point costs to determine wheeling rates, the District would need to ensure that its information systems could provide easy and timely access to historical and projected data on the flow of imported and local water within its facilities.

The District's ability to calculate point-to-point charges, as well as wheeling rates, may also be dependent on the rate structure. O&M costs associated with wheeling could presumably be recovered through variable charges. The cost allocations might depend on whether the wheeling costs were characterized as incremental or non-incremental costs (i.e., by "non-incremental" we mean that the wheeling costs are undifferentiated and pooled with other deliveries and charged at the same rates). The allocation of capital costs associated with wheeling could also be recovered through a variable charge, as is currently the case, or through a fixed, capacity-related component.

Ultimately, a discussion of point-to-point charges and wheeling rates becomes a discussion of how the District would calculate the rates to serve a single customer within its system, which is an extreme case. Establishing these rates is largely a rate structure issue. The cost data and allocation formula will for the most part be dictated by the rate structure. The rate structure will need to be tailored to both the need to recover costs fairly as well as to the District's ability manage its accounting and engineering data. A complete discussion of this subject needs to consider not only cost of service mechanics but also rate structure policies, which is beyond the scope of the current study.

APPENDIX – COST OF SERVICE MODEL

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Outline of Cost of Service Model Tables
(Worksheet names in parentheses)

Outline of Cost of Service Model Tables (Outline)

I. Allocation of Operating Budget
    A. Source of Supply (Operating)
    B. Raw Water T&D (Operating)
    C. Water Treatment (Operating)
    D. Treated Water T&D (Operating)
    E. Administration & General (Operating)
    F. Summary of Operating Budget (Operating)

II. Allocation of Capital Projects Budget
    A. Cash Funded Projects
        1. Five Year CIP - Cash Funded Projects (5 Yr Cash Proj)
        2. Allocation of Cash Funded Projects (Alloc Cash Proj)
    B. Debt Funded Projects
        1. Five Year CIP - Debt Funded Projects (5 Yr Debt Proj)
        2. Allocation of Debt Funded Projects (Alloc Debt Proj)
    C. Summary of Capital Allocations (Alloc Debt Proj)

III. Summary of Operating and Capital Allocations (Alloc Debt Proj)

IV. Allocation of Other Revenues and Transfers to Reserves (Other Rev)

V. Allocation Factors
    A. Allocation Factors-Operating Expenditures (Alloc Op)
    B. Allocation Factors-Capital Expenditures (Alloc Cap)

VI. Summary of Cost of Service
    A. Fully Allocated Cost Model - Unit Costs (Summary)
    B. Pooled Cost Model
        1. Surcharge and Pooled Cost Components (Summary)
        2. Unit Costs (Summary)
    C. Comparison of Unit Costs and Existing Revenue (Comparison)

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Operations and Operating Project Expenditures

Job	Job Description	FY 2000/01 Adjusted Budget	Alloc. Factor	Raw Water								Treated Water	Recycled Water		Sub-total	Indirect Costs	Totals
				Groundwater				Surface Water									
				Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5			
				M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I					
Table I.A. - Source of Supply																	
800001	UST Site Specific Summary	720,056	G	491,234	10,496	92,369	125,957	0	0	0	0	0	0	0	720,056	0	720,056
880000	Program Management Summary	375,847	G	256,409	5,479	48,214	65,746	0	0	0	0	0	0	0	375,847	0	375,847
890000	Non LOP Program Summary	139,400	G	95,101	2,032	17,882	24,385	0	0	0	0	0	0	0	139,400	0	139,400
	Sub-total	1,235,303		842,743	18,007	158,465	216,088	0	0	0	0	0	0	0	1,235,303	0	1,235,303
910101	Land Development Review	190,138	Ind-SOS	0	0	0	0	0	0	0	0	0	0	0	0	190,138	190,138
910408	Regional Water Reliability	143,981	GST	56,132	1,199	10,555	14,393	240	240	54	240	60,929	0	0	143,981	0	143,981
910410	In-Stream Recharge Prog Devel	295,792	G	201,794	4,312	37,944	51,742	0	0	0	0	0	0	0	295,792	0	295,792
910411	Water Supply Reliability Plan	141,460	GST	55,149	1,178	10,370	14,141	236	236	53	236	59,862	0	0	141,460	0	141,460
910412	Operations Planning Water	126,460	Ind-SOS	0	0	0	0	0	0	0	0	0	0	0	0	126,460	126,460
	Sub-total	707,693		313,074	6,690	58,869	80,275	476	476	107	476	120,792	0	0	581,233	126,460	707,693
910501	Insurance & Risk Management	31,492	Ind-SOS	0	0	0	0	0	0	0	0	0	0	0	0	31,492	31,492
910603	Environmental Compliance Supp	68,296	Ind-SOS	0	0	0	0	0	0	0	0	0	0	0	0	68,296	68,296
910806	Piezometer Replacement	300,437	GST	117,127	2,503	22,024	30,032	501	501	112	501	127,138	0	0	300,437	0	300,437
910807	Seismic Safety of District's D	272,192	GST	106,115	2,267	19,953	27,209	453	453	102	453	115,185	0	0	272,192	0	272,192
	Sub-total	572,629		223,242	4,770	41,977	57,242	954	954	214	954	242,322	0	0	572,629	0	572,629
910902	Water Recycling Fac-Gilroy	20,513	R-5	0	0	0	0	0	0	0	0	0	0	20,513	0	0	20,513
911101	Water Rights	88,022	S	0	0	0	0	27,302	27,302	6,116	27,302	0	0	0	88,022	0	88,022
911303	Water Purchases-SWP	11,000,000	SWP	4,865,784	0	0	0	0	0	0	0	6,134,216	0	0	11,000,000	0	11,000,000
911303	Water Purchases-CVP	9,204,159	CVP	1,563,685	4,575	538,511	169,832	39,908	322	10,854	27,364	6,849,107	0	0	9,204,159	0	9,204,159
911304	Imported Water Program	1,894,067	SWP+CVP	472,191	2,369	61,227	83,454	4,237	153	1,429	15,263	1,253,743	0	0	1,894,067	0	1,894,067
911305	Water Banking Program	1,500,000	GST	584,782	12,495	109,959	149,944	2,499	2,499	560	2,499	634,763	0	0	1,500,000	0	1,500,000
	Sub-total	23,598,226		7,486,442	19,440	709,698	403,231	46,644	2,974	12,843	45,126	14,871,828	0	0	23,598,226	0	23,598,226
911501	Water Conservation Program	5,142,629	GST	2,004,877	42,839	376,985	514,071	8,568	8,568	1,919	8,568	2,176,234	0	0	5,142,629	0	5,142,629
911502	Water Utility General Outreach	282,624	Ind-SOS	0	0	0	0	0	0	0	0	0	0	0	0	282,624	282,624
911503	School Program	253,254	Ind-SOS	0	0	0	0	0	0	0	0	0	0	0	0	253,254	253,254
	Sub-total	5,678,507		2,004,877	42,839	376,985	514,071	8,568	8,568	1,919	8,568	2,176,234	0	0	5,142,629	535,878	5,678,507
911801	Water Recycling - General	1,079,466	GST	420,835	8,992	79,131	107,906	1,798	1,798	403	1,798	456,803	0	0	1,079,466	0	1,079,466
911803	Bay Area Regional Water Recycl	53,708	GST	20,938	447	3,937	5,369	89	89	20	89	22,728	0	0	53,708	0	53,708
911807	Indirect Potable Reuse Feas St	125,638	GST	48,981	1,047	9,210	12,559	209	209	47	209	53,167	0	0	125,638	0	125,638
	Sub-total	1,258,812		490,753	10,486	92,278	125,834	2,097	2,097	470	2,097	532,698	0	0	1,258,812	0	1,258,812
912104	San Felipe Reach 1 Operations	329,036	CVP	55,900	164	19,251	6,071	1,427	12	388	978	244,846	0	0	329,036	0	329,036
912180	San Felipe Reach 1 - PM	193,009	CVP	32,790	96	11,292	3,561	837	7	228	574	143,624	0	0	193,009	0	193,009
912181	San Felipe Reach 1 - CM	218,014	CVP	37,038	108	12,755	4,023	945	8	257	648	162,231	0	0	218,014	0	218,014
912199	San Felipe Reach 1 Gen Maint	258,482	CVP	43,913	128	15,123	4,769	1,121	9	305	768	192,345	0	0	258,482	0	258,482
	Sub-total	998,541		169,641	496	58,422	18,425	4,330	35	1,178	2,969	743,046	0	0	998,541	0	998,541
912202	San Felipe Reach 2 Operations	45,767	CVP	7,775	23	2,678	844	198	2	54	136	34,057	0	0	45,767	0	45,767
912280	San Felipe Reach 2 PM	24,304	CVP	4,129	12	1,422	448	105	1	29	72	18,085	0	0	24,304	0	24,304
912281	San Felipe Reach 2 CM	18,940	CVP	3,218	9	1,108	349	82	1	22	56	14,094	0	0	18,940	0	18,940
912299	San Felipe Reach 2 Gen Maint	67,326	CVP	11,438	33	3,939	1,242	292	2	79	200	50,099	0	0	67,326	0	67,326
	Sub-total	156,337		26,560	78	9,147	2,885	678	5	184	465	116,335	0	0	156,337	0	156,337
912302	San Felipe Reach 3 Operations	155,253	CVP	26,376	77	9,083	2,865	673	5	183	462	115,529	0	0	155,253	0	155,253
912380	San Felipe Reach 3 PM	165,126	CVP	28,053	82	9,661	3,047	716	6	195	491	122,875	0	0	165,126	0	165,126
912381	San Felipe Reach 3 CM	125,098	CVP	21,253	62	7,319	2,308	542	4	148	372	93,089	0	0	125,098	0	125,098
912399	San Felipe Reach 3 Gen Maint	241,071	CVP	40,955	120	14,104	4,448	1,045	8	284	717	179,389	0	0	241,071	0	241,071
	Sub-total	686,548		116,637	341	40,168	12,668	2,977	24	810	2,041	510,882	0	0	686,548	0	686,548

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Operations and Operating Project Expenditures

				Raw Water								Treated	Recycled				
		FY 2000/01		Groundwater				Surface Water				Water	Water		Sub-total	Indirect Costs	Totals
		Adjusted	Alloc.	Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5			
Job	Job Description	Budget	Factor	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I					
Table I.A. - Source of Supply																	
914502	Well Ordinance Program	1,478,639	G	1,008,751	21,555	189,680	258,654	0	0	0	0	0	0	0	1,478,639	0	1,478,639
915501	Groundwater Level Monitoring	164,424	G	112,173	2,397	21,092	28,762	0	0	0	0	0	0	0	164,424	0	164,424
915502	Groundwater Supply Management	370,263	G	252,599	5,397	47,497	64,769	0	0	0	0	0	0	0	370,263	0	370,263
	Sub-total	534,687		364,772	7,794	68,590	93,531	0	0	0	0	0	0	0	534,687	0	534,687
917601	Source of Supply General	333,280	GST	129,931	2,776	24,431	33,316	555	555	124	555	141,036	0	0	333,280	0	333,280
917680	Dams & Reservoirs PM	53,613	GST	20,901	447	3,930	5,359	89	89	20	89	22,688	0	0	53,613	0	53,613
917681	Dams & Reservoirs CM	110,441	GST	43,056	920	8,096	11,040	184	184	41	184	46,736	0	0	110,441	0	110,441
917699	SS General Maintenance	932,953	GST	363,716	7,772	68,391	93,260	1,554	1,554	348	1,554	394,803	0	0	932,953	0	932,953
	Sub-total	1,430,287		557,604	11,915	104,849	142,975	2,383	2,383	534	2,383	605,262	0	0	1,430,287	0	1,430,287
917901	Water Quality & Rsvr Wtshd Mgm	1,178,824	GST	459,570	9,820	86,415	117,838	1,964	1,964	440	1,964	498,849	0	0	1,178,824	0	1,178,824
917903	Geologic and Groundwater Liais	423,589	G	288,979	6,175	54,338	74,097	0	0	0	0	0	0	0	423,589	0	423,589
917908	Water Quality Special Studies	604,555	GST	235,688	5,036	44,317	60,433	1,007	1,007	226	1,007	255,833	0	0	604,555	0	604,555
917912	Groundwater Quality Management	483,905	G	330,128	7,054	62,075	84,648	0	0	0	0	0	0	0	483,905	0	483,905
	Sub-total	2,690,873		1,314,365	28,085	247,146	337,017	2,971	2,971	666	2,971	754,682	0	0	2,690,873	0	2,690,873
	Sub-total Source of Supply	41,425,543		14,919,461	172,496	2,156,272	2,262,896	99,380	47,790	25,039	95,352	20,674,082	0	20,513	40,473,279	952,264	41,425,543
	Source of Supply Allocation Factors	Ind-SOS		36.86%	0.43%	5.33%	5.59%	0.25%	0.12%	0.06%	0.24%	51.08%	0.00%	0.05%	100.00%		
	Indirect Cost Allocation		Ind-SOS	351,028	4,059	50,733	53,242	2,338	1,124	589	2,243	486,424	0	483	952,264	-952,264	0
	Total Source of Supply	41,425,543		15,270,489	176,554	2,207,005	2,316,138	101,718	48,914	25,628	97,595	21,160,506	0	20,996	41,425,543	0	41,425,543

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Operations and Operating Project Expenditures

Job	Job Description	FY 2000/01 Adjusted Budget	Alloc. Factor	Raw Water								Treated Water	Recycled Water		Sub-total	Indirect Costs	Totals
				Groundwater				Surface Water									
				Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5			
				M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I					
Table I.B. - Raw Water T&D																	
920101	Land Development Review	204,955	Ind-RWTD	0	0	0	0	0	0	0	0	0	0	0	0	204,955	204,955
920407	RW Stream Management ER/EIR	67,179	Ind-RWTD	0	0	0	0	0	0	0	0	0	0	0	0	67,179	67,179
920412	Solid Materials & Waste Mgmt	10,237	Ind-RWTD	0	0	0	0	0	0	0	0	0	0	0	0	10,237	10,237
920414	Environmental Strategy-FAHCE	952,502	Ind-RWTD	0	0	0	0	0	0	0	0	0	0	0	0	952,502	952,502
	Sub-total	1,029,918		0	0	0	0	0	0	0	0	0	0	0	0	1,029,918	1,029,918
920501	Insurance & Risk Management	12,508	Ind-RWTD	0	0	0	0	0	0	0	0	0	0	0	0	12,508	12,508
920603	Environmental Compliance Supp	239,042	Ind-RWTD	0	0	0	0	0	0	0	0	0	0	0	0	239,042	239,042
922680	Vasona Pump Station - PM	15,726	Zone 2	7,434	159	0	0	32	32	0	0	8,070	0	0	15,726	0	15,726
922681	Vasona Pump Station - CM	30,735	Zone 2	14,529	310	0	0	62	62	0	0	15,771	0	0	30,735	0	30,735
922699	Vasona Pump Station Budget	36,871	Zone 2	17,430	372	0	0	74	74	0	0	18,920	0	0	36,871	0	36,871
	Sub-total	83,332		39,393	842	0	0	168	168	0	0	42,760	0	0	83,332	0	83,332
923703	RW Process Control	122,134	GST	47,614	1,017	8,953	12,209	203	203	46	203	51,684	0	0	122,134	0	122,134
923905	Stevens Ck PL Blue Hills Lease	145,982	GST	56,912	1,216	10,701	14,593	243	243	54	243	61,776	0	0	145,982	0	145,982
927601	Raw Water T&D Gen'l Oper	1,248,728															
927605	RW Facilities Sandbag Protectn	16,798															
927680	Raw Water Trans & Dist PM	109,725															
927681	Raw Water Trans & Dist CM	82,921															
927699	RW General Maintenance	2,254,212															
	Sub-total	3,712,384		0	0	0	0	0	0	0	0	0	0	0	0	0	0
	T&D - GST 50%	1,856,192	GST	723,645	15,462	136,070	185,550	3,092	3,092	693	3,092	785,495	0	0	1,856,192	0	1,856,192
	Recharge - G 50%	1,856,192	G	1,266,323	27,058	238,112	324,698	0	0	0	0	0	0	0	1,856,192	0	1,856,192
		3,712,384		1,989,968	42,521	374,182	510,248	3,092	3,092	693	3,092	785,495	0	0	3,712,384	0	3,712,384
927801	Corrosion Control	68,290	GST	26,623	569	5,006	6,826	114	114	25	114	28,899	0	0	68,290	0	68,290
927802	RW Corrosion Control	134,862	GST	52,577	1,123	9,886	13,481	225	225	50	225	57,070	0	0	134,862	0	134,862
	Sub-total	203,152		79,200	1,692	14,892	20,308	338	338	76	338	85,969	0	0	203,152	0	203,152
	92XXXX Sub-total Raw Water T&D	5,753,407		2,213,087	47,288	408,729	557,357	4,046	4,046	869	3,878	1,027,684	0	0	4,266,984	1,486,423	5,753,407
	92XXXX Raw Water T&D Alloc Factor	Ind-RWTD		51.87%	1.11%	9.58%	13.06%	0.09%	0.09%	0.02%	0.09%	24.08%	0.00%	0.00%	100.00%		
	Indirect Cost Allocation		Ind-RWTD	770,939	16,473	142,383	194,158	1,409	1,409	303	1,351	357,998	0	0	1,486,423	-1,486,423	0
	92XXXX Total Raw Water T&D	5,753,407		2,984,026	63,761	551,111	751,515	5,455	5,455	1,171	5,228	1,385,682	0	0	5,753,407	0	5,753,407

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Operations and Operating Project Expenditures

		FY 2000/01 Adjusted Budget	Alloc. Factor	Raw Water								Treated Water	Recycled Water		Sub-total	Indirect Costs	Totals
				Groundwater				Surface Water									
				Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5			
Job	Job Description			M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I					
Table I.C. - Water Treatment																	
930412	Solid Materials & Waste Mgmt	6,336	T	0	0	0	0	0	0	0	0	6,336	0	0	6,336	0	6,336
	Sub-total	6,336		0	0	0	0	0	0	0	0	6,336	0	0	6,336	0	6,336
930501	Insurance & Risk Managment	36,797	T	0	0	0	0	0	0	0	0	36,797	0	0	36,797	0	36,797
930603	Environmental Compliance Supp	603,291	T	0	0	0	0	0	0	0	0	603,291	0	0	603,291	0	603,291
930806	W T Operations Training Progrm	247,350	T	0	0	0	0	0	0	0	0	247,350	0	0	247,350	0	247,350
		247,350		0	0	0	0	0	0	0	0	247,350	0	0	247,350	0	247,350
932307	PWTP Landslide Monitoring	213,909	T	0	0	0	0	0	0	0	0	213,909	0	0	213,909	0	213,909
932309	PWTP Operations General	1,326,442	T	0	0	0	0	0	0	0	0	1,326,442	0	0	1,326,442	0	1,326,442
932310	Pit Sludge Removal Operation	162,941	T	0	0	0	0	0	0	0	0	162,941	0	0	162,941	0	162,941
932380	Penitencia Water Treatment PM	170,187	T	0	0	0	0	0	0	0	0	170,187	0	0	170,187	0	170,187
932381	Penitencia Water Treatment CM	245,867	T	0	0	0	0	0	0	0	0	245,867	0	0	245,867	0	245,867
932399	Penitencia WTP General Maint	183,505	T	0	0	0	0	0	0	0	0	183,505	0	0	183,505	0	183,505
	Sub-total	2,302,851		0	0	0	0	0	0	0	0	2,302,851	0	0	2,302,851	0	2,302,851
932805	Santa Teresa Wtr Trmnt Plant	1,767,423	T	0	0	0	0	0	0	0	0	1,767,423	0	0	1,767,423	0	1,767,423
932811	STWTP Sludge Removal	110,054	T	0	0	0	0	0	0	0	0	110,054	0	0	110,054	0	110,054
932880	Santa Teresa Wtr Treatment PM	227,021	T	0	0	0	0	0	0	0	0	227,021	0	0	227,021	0	227,021
932881	Santa Teresa Wtr Treatment CM	220,469	T	0	0	0	0	0	0	0	0	220,469	0	0	220,469	0	220,469
932899	Santa Teresa Wtr General Maint	214,001	T	0	0	0	0	0	0	0	0	214,001	0	0	214,001	0	214,001
	Sub-total	2,538,968		0	0	0	0	0	0	0	0	2,538,968	0	0	2,538,968	0	2,538,968
932912	Rinconada Water Treatment Plan	2,726,829	T	0	0	0	0	0	0	0	0	2,726,829	0	0	2,726,829	0	2,726,829
932913	Rinc WTP/Sludge Rem/Lwr Bed	205,660	T	0	0	0	0	0	0	0	0	205,660	0	0	205,660	0	205,660
932980	Rinconada Water Treatment PM	326,745	T	0	0	0	0	0	0	0	0	326,745	0	0	326,745	0	326,745
932981	Rinconada Water Treatment CM	333,992	T	0	0	0	0	0	0	0	0	333,992	0	0	333,992	0	333,992
932999	Rinconada WTP General Maint	557,547	T	0	0	0	0	0	0	0	0	557,547	0	0	557,547	0	557,547
	Sub-total	4,150,773		0	0	0	0	0	0	0	0	4,150,773	0	0	4,150,773	0	4,150,773
933701	WT Process Control	156,391	T	0	0	0	0	0	0	0	0	156,391	0	0	156,391	0	156,391
934002	Wtr District Laboratory	2,033,419	T	0	0	0	0	0	0	0	0	2,033,419	0	0	2,033,419	0	2,033,419
937601	Water Treatment General Oper	812,931	T	0	0	0	0	0	0	0	0	812,931	0	0	812,931	0	812,931
937699	WT General Maintenance	677,331	T	0	0	0	0	0	0	0	0	677,331	0	0	677,331	0	677,331
	Sub-total	1,490,262		0	0	0	0	0	0	0	0	1,490,262	0	0	1,490,262	0	1,490,262
	93XXXX Sub-total Water Treatment	13,566,438		0	0	0	0	0	0	0	0	13,566,438	0	0	13,566,438	0	13,566,438
	93XXXX Water Treatmt Alloc Factor	Ind-T		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%		
	Indirect Cost Allocation		Ind-T	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	93XXXX Total Water Treatment	13,566,438		0	0	0	0	0	0	0	0	13,566,438	0	0	13,566,438	0	13,566,438

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Operations and Operating Project Expenditures

				Raw Water								Treated Water	Recycled Water		Sub-total	Indirect Costs	Totals
		FY 2000/01		Groundwater				Surface Water									
		Adjusted	Alloc.	Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5			
Job	Job Description	Budget	Factor	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I					
Table I.D. - Treated Water T&D																	
940101	Land Development Review	174,235	T	0	0	0	0	0	0	0	0	174,235	0	0	174,235	0	174,235
940501	Insurance & Risk Management	11,256	T	0	0	0	0	0	0	0	0	11,256	0	0	11,256	0	11,256
940603	Environmental Compliance Supp	79,669	T	0	0	0	0	0	0	0	0	79,669	0	0	79,669	0	79,669
943701	TW Process Control	20,256	T	0	0	0	0	0	0	0	0	20,256	0	0	20,256	0	20,256
947601	Treated Water T&D General Opr	218,870	T	0	0	0	0	0	0	0	0	218,870	0	0	218,870	0	218,870
947680	Treated Water T&D PM	132,588	T	0	0	0	0	0	0	0	0	132,588	0	0	132,588	0	132,588
947681	Treated Water T&D CM	141,534	T	0	0	0	0	0	0	0	0	141,534	0	0	141,534	0	141,534
947699	TW General Maintenance	424,234	T	0	0	0	0	0	0	0	0	424,234	0	0	424,234	0	424,234
	Sub-total	917,226		0	0	0	0	0	0	0	0	917,226	0	0	917,226	0	917,226
947801	TW Corrosion Control	141,862	T	0	0	0	0	0	0	0	0	141,862	0	0	141,862	0	141,862
	94XXXX Sub-total Treated Water T&D	1,344,504		0	0	0	0	0	0	0	0	1,344,504	0	0	1,344,504	0	1,344,504
	94XXXX Treated Water T&D Alloc Ftr	Ind-TWTD		0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	100.00%	0.00%	0.00%	100.00%		
	Indirect Cost Allocation		Ind-TWTD	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	94XXXX Total Treated Water T&D	1,344,504		0	0	0	0	0	0	0	0	1,344,504	0	0	1,344,504	0	1,344,504
Sub-total Operation Expenditures																	
	91XXXX Total Source of Supply	41,425,543		15,270,489	176,554	2,207,005	2,316,138	101,718	48,914	25,628	97,595	21,160,506	0	20,996		0	41,425,543
	92XXXX Total Raw Water T&D	5,753,407		2,984,026	63,761	551,111	751,515	5,455	5,455	1,171	5,228	1,385,682	0	0		0	5,753,407
	93XXXX Total Water Treatment	13,566,438		0	0	0	0	0	0	0	0	13,566,438	0	0		0	13,566,438
	94XXXX Total Treated Water T&D	1,344,504		0	0	0	0	0	0	0	0	1,344,504	0	0		0	1,344,504
	Sub-total Operation Expenditures	62,089,892		18,254,516	240,315	2,758,117	3,067,653	107,173	54,369	26,799	102,824	37,457,130	0	20,996		0	62,089,892
	Ind-Op Allocation Factor	100.00%		29.40%	0.39%	4.44%	4.94%	0.17%	0.09%	0.04%	0.17%	60.33%	0.00%	0.03%		0.00%	100.00%

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Operations and Operating Project Expenditures

				Raw Water								Treated Water	Recycled Water		Sub-total	Indirect Costs	Totals
		FY 2000/01 Adjusted Budget	Alloc. Factor	Groundwater				Surface Water									
				Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5			
Job	Job Description			M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I					
Table I.E. - Administration & General																	
950415	Water Utility Marketing Strate	257,150	Ind-Op	75,602	995	11,423	12,705	444	225	111	426	155,132	0	87	257,150		257,150
		257,150		75,602	995	11,423	12,705	444	225	111	426	155,132	0	87	257,150	0	257,150
950501	Insurance & Risk Management	110,296	Ind-Op	0	0	0	0	0	0	0	0	0	0	0	0	110,296	110,296
950601	Water Utility General Managemt	301,468	Ind-Op	88,632	1,167	13,392	14,895	520	264	130	499	181,867	0	102	301,468	0	301,468
950603	Technical & Support Projects	1,366,519	Ind-Op	401,759	5,289	60,703	67,515	2,359	1,197	590	2,263	824,383	0	462	1,366,519	0	1,366,519
950606	Administration of Dock Permits	3,978	Ind-Op	1,170	15	177	197	7	3	2	7	2,400	0	1	3,978	0	3,978
950608	Water Utility Basic Hydrology	5,535	GST	2,158	46	406	553	9	9	2	9	2,342	0	0	5,535	0	5,535
	Sub-total	1,677,500		493,718	6,517	74,677	83,159	2,895	1,473	724	2,778	1,010,993	0	565	1,677,500	0	1,677,500
951001	Zone W2 Wtr Revenue Program	245,365	Zone 2	115,991	2,478	0	0	496	496	0	0	125,904	0	0	245,365	0	245,365
951002	Zone W5 Wtr Revenue Program	506,099	Zone 5	0	0	206,143	281,104	0	0	1,049	4,685	0	0	13,118	506,099	0	506,099
	Sub-total	751,464		115,991	2,478	206,143	281,104	496	496	1,049	4,685	125,904	0	13,118	751,464	0	751,464
951101	Vasona Meter Test Fac Equip	49,750	GST	19,395	414	3,647	4,973	83	83	19	83	21,053	0	0	49,750	0	49,750
951103	Water Use Measurement General	883,158	Ind-Op	259,650	3,418	39,231	43,634	1,524	773	381	1,463	532,785	0	299	883,158	0	883,158
951104	Water Use Measurement S W	24,381	GST	9,505	203	1,787	2,437	41	41	9	41	10,317	0	0	24,381	0	24,381
	Sub-total	957,289		288,550	4,036	44,665	51,044	1,648	897	409	1,586	564,155	0	299	957,289	0	957,289
951201	Fin/Economic Water Rate Study	275,874	Ind-Op	81,107	1,068	12,255	13,630	476	242	119	457	166,427	0	93	275,874	0	275,874
957301	Water Supply Planning / Gen	230,358	GST	89,806	1,919	16,887	23,027	384	384	86	384	97,482	0	0	230,358	0	230,358
957401	Integrated Water Resource Plan	183,589	GST	71,573	1,529	13,458	18,352	306	306	69	306	77,690	0	0	183,589	0	183,589
957403	Urban Water Management Plan	135,656	GST	52,886	1,130	9,944	13,561	226	226	51	226	57,406	0	0	135,656	0	135,656
	Sub-total	319,245		124,459	2,659	23,403	31,913	532	532	119	532	135,097	0	0	319,245	0	319,245
958099	Performance Efficiency & Accou	7,587,190	Ind-Op	2,230,645	29,366	337,033	374,858	13,096	6,644	3,275	12,565	4,577,144	0	2,566	7,587,190	0	7,587,190
958602	Anderson Hydrogeneration Syst	76,470	Ind-Op	22,482	296	3,397	3,778	132	67	33	127	46,132	0	26	76,470	0	76,470
958603	Anderson Hydrogen Ferc Admin	110,655	Ind-Op	32,533	428	4,915	5,467	191	97	48	183	66,755	0	37	110,655	0	110,655
958680	Anderson Hydrogeneration PM	8,719	Ind-Op	2,563	34	387	431	15	8	4	14	5,260	0	3	8,719	0	8,719
958681	Anderson Hydrogeneration CM	17,152	Ind-Op	5,043	66	762	847	30	15	7	28	10,347	0	6	17,152	0	17,152
958699	Anderson Hydro Gen Maintenance	29,120	Ind-Op	8,561	113	1,294	1,439	50	25	13	48	17,567	0	10	29,120	0	29,120
	Sub-total	242,116		71,182	937	10,755	11,962	418	212	105	401	146,062	0	82	242,116	0	242,116
	95XXXX Sub-total Administration & Ge	12,408,482		3,571,061	49,976	737,240	883,402	20,389	11,104	5,996	23,813	6,978,396	0	16,810	12,298,186	110,296	12,408,482
	95XXXX Admin. & General Allocation Factors		Ind-A&G	29.04%	0.41%	5.99%	7.18%	0.17%	0.09%	0.05%	0.19%	56.74%	0.00%	0.14%	100.00%		
	Indirect Cost Allocation		Ind-Op	32,027	448	6,612	7,923	183	100	54	214	62,586	0	151	110,296	-110,296	0
	95XXXX Total Admin. & General	12,408,482		3,603,088	50,424	743,852	891,325	20,572	11,204	6,050	24,027	7,040,981	0	16,961	12,408,482	0	12,408,482
Total Operating Outlays		**74,498,374**		**21,857,603**	**290,739**	**3,501,968**	**3,958,978**	**127,745**	**65,573**	**32,849**	**126,850**	**44,498,112**	**0**	**37,956**	**74,498,374**	**0**	**74,498,374**

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Operations and Operating Project Expenditures

Job	Job Description	FY 2000/01 Adjusted Budget	Alloc. Factor	Raw Water								Treated Water	Recycled Water		Sub-total	Indirect Costs	Totals
				Groundwater				Surface Water									
				Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5			
				M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I					
Table I.F. - Summary of Operating Budget																	
	Total Source of Supply	41,425,543		15,270,489	176,554	2,207,005	2,316,138	101,718	48,914	25,628	97,595	21,160,506	0	20,996		0	41,425,543
	Total Raw Water T&D	5,753,407		2,984,026	63,761	551,111	751,515	5,455	5,455	1,171	5,228	1,385,682	0	0		0	5,753,407
	Total Water Treatment	13,566,438		0	0	0	0	0	0	0	0	13,566,438	0	0		0	13,566,438
	Total Treated Water T&D	1,344,504		0	0	0	0	0	0	0	0	1,344,504	0	0		0	1,344,504
	Total Admin. & General	12,408,482		3,603,088	50,424	743,852	891,325	20,572	11,204	6,050	24,027	7,040,981	0	16,961		0	12,408,482
	Total Operating Outlays	74,498,374		21,857,603	290,739	3,501,968	3,958,978	127,745	65,573	32,849	126,850	44,498,112	0	37,956		0	74,498,374

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Capital Projects

Table II.A.1. - Five Year CIP - Cash Funded Projects

JOB #	Cash Funded Projects ($ in Thousands)	Budget FY01	FY02	FY03	FY04	FY05	FY 01 thru 05
912106	Pacheco Pump Station - Restroom	58	-	-	-	-	58
912203	Santa Clara Tunnel Landslide	75	-	-	-	-	75
918501	Almaden Dam Outlet Works	233	1,520	250	4,840	-	6,843
918703	Fellows Dike Rehabilitation	327	370	570	240	4,574	6,081
922502	Central Pipeline Protect at Route 87	114	3	10	-	-	127
922607	Vasona Restroom Modifications	46	-	-	-	-	46
924002	Guadalupe River- Alamitos Fish Ladder	1	-	-	-	-	1
924501	Coyote Canal Diversion Dam Fish Screen	4	-	-	-	-	4
924601	Coyote Canal Extension Abandonment	179	1,025	154	-	-	1,358
924802	Coyote Percolation Dam - Fish Ladder	5	-	-	-	-	5
924902	Evergreen Canal Abandonment	12	-	-	-	-	12
925302	Kirk Ditch	24	-	-	-	-	24
926102	Penitencia Fish Facilities	3	-	-	-	-	3
926103	Penitencia Perc Pond Levee RPR	112	-	-	-	-	112
926802	Masson Dam Fish Ladder/ Screen	11	-	-	-	-	11
927401	San Pedro Recharge Facility - Stage 1 (Lands	761	-	-	-	-	761
932321	PWTP Landscape & Erosion Contr.	11	-	-	-	-	11
932322	Modular Water Treatment Plt (PWTP)	83		-	-	-	83
940803	Treated Water T&D Instrument Upgrade	121	-	-	-	-	121
941701	San Tomas Injection Well	88	-	-	-	-	88
945002	Rinconada Reservoir Roof Rehab	910	241	1,116	-	-	2,267
	Total Cash Funded Projects	3,177	3,159	2,100	5,080	4,574	18,090

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Capital Projects

				Direct Costs												
				Raw Water								Treated	Recycled		
				Groundwater				Surface Water				Water	Water		Totals
			Alloc.	Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5	
JOB #		FY 01 thru 05	Factor	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I			
Table II.A.2. - Cash Funded Projects - Allocation of FY 00-01 Cash Funded Projects															
912106	Pacheco Pump Station - Restroom	58	GST	23	0	4	6	0	0	0	0	25	0	0	58
912203	Santa Clara Tunnel Landslide	75	GST	29	1	5	7	0	0	0	0	32	0	0	75
918501	Almaden Dam Outlet Works	6,843	GST	2,668	57	502	684	11	11	3	11	2,896	0	0	6,843
918703	Fellows Dike Rehabilitation	6,081	GST	2,371	51	446	608	10	10	2	10	2,573	0	0	6,081
922502	Central Pipeline Protect at Route 87	127	GST	49	1	9	13	0	0	0	0	54	0	0	127
922607	Vasona Restroom Modifications	46	GST	18	0	3	5	0	0	0	0	19	0	0	46
924002	Guadalupe River- Alamitos Fish Ladder	1	GST	0	0	0	0	0	0	0	0	0	0	0	1
924501	Coyote Canal Diversion Dam Fish Screen	4	GST	2	0	0	0	0	0	0	0	2	0	0	4
924601	Coyote Canal Extension Abandonment	1,358	GST	529	11	100	136	2	2	1	2	575	0	0	1,358
924802	Coyote Percolation Dam - Fish Ladder	5	GST	2	0	0	0	0	0	0	0	2	0	0	5
924902	Evergreen Canal Abandonment	12	GST	5	0	1	1	0	0	0	0	5	0	0	12
925302	Kirk Ditch	24	G	16	0	3	4	0	0	0	0	0	0	0	24
926102	Penitencia Fish Facilities	3	GST	1	0	0	0	0	0	0	0	1	0	0	3
926103	Penitencia Perc Pond Levee RPR	112	G-2	109	2	0	0	0	0	0	0	0	0	0	112
926802	Masson Dam Fish Ladder/ Screen	11	G	7	0	1	2	0	0	0	0	0	0	0	11
927401	San Pedro Recharge Facility - Stage 1 (Land	761	G	519	11	98	133	0	0	0	0	0	0	0	761
932321	PWTP Landscape & Erosion Contr.	11	T	0	0	0	0	0	0	0	0	11	0	0	11
932322	Modular Water Treatment Plt (PWTP)	83	T	0	0	0	0	0	0	0	0	83	0	0	83
940803	Treated Water T&D Instrument Upgrade	121	T	0	0	0	0	0	0	0	0	121	0	0	121
941701	San Tomas Injection Well	88	G	60	1	11	15	0	0	0	0	0	0	0	88
945002	Rinconada Reservoir Roof Rehab	2,267	T	0	0	0	0	0	0	0	0	2,267	0	0	2,267
	Total Cash Funded Projects	18,090		6,409	137	1,185	1,615	24	24	5	24	8,666	0	0	18,090
			Cash CIP	35.43%	0.76%	6.55%	8.93%	0.13%	0.13%	0.03%	0.13%	47.91%	0.00%	0.00%	100.00%
	FY 00-01 Allocated	3,177		1,126	24	208	284	4	4	1	4	1,522	0	0	3,177

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Capital Projects

Table II.B.1. - Five Year CIP - Debt Funded Projects

JOB #	Debt Funded Projects ($ in Thousands)	Budget FY01	FY02	FY03	FY04	FY05	FY 01 thru 05
910904	South County Recycled Water Impv.	4,379	-	-	-	-	4,379
911504	Water Facilities Signage	90	100	-	-	-	190
919005	Lenihan Dam Outlet Modifications	248	220	1,310	260	11,445	13,483
923002	Almaden Valley Pipeline Cathodic Prot.	81	-	-	-	-	81
923702	Raw Water Control System	650	-	-	-	-	650
927201	Almaden Calero Canal Rehabilitation	2,692	-	-	1,157	600	4,449
932304	Treated Water Improvement - Pen	290	149	60	60	30	589
932804	Treated Water Improvement - San T	290	249	60	60	30	689
932904	Treated Water Improvement - Rinc.	299	249	62	62	30	701
932325	Stage 1 - Pen	1,679	451	82	-	-	2,212
932825	Stage 1 - San T.	236	110	20	-	-	366
932925	Stage 1 - Rinc.	449	539	98	-	-	1,086
932328	Stage 2 - Pen	18,599	15,000	1,250	1,000	1,000	36,849
932828	Stage 2 - San T.	13,285	18,600	1,550	1,240	1,240	35,915
932928	Stage 2 - Rinc.	12,399	26,400	2,200	1,760	1,760	44,519
932319	PWTP Control Center upgrade	369		-	-	-	369
932320	PWTP Clearwell Mods	7	-	-	-	-	7
932331	PWTP Mechanic Repair Shop & Stor.	172	3,000	764	40	-	3,976
	PWTP Zinc Orthophosphate						0
	RWTP Zinc Orthophosphate						0
932812	STWTP Roof Repairs		-	-	-	-	0
932927	RWTP Landing Overhang Repairs	131		-	-	-	131
934003	New Water Quality Lab.	6,373	500		-	-	6,873
941901	SCVWD/San Francisco WD Intertie	60	27	-	-	-	87
943302	Milpitas Pipeline Relocation	365	-	-	-	-	365
	Total Debt Funded Projects	63,142	65,594	7,455	5,639	16,135	157,965

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Capital Projects

				Direct Costs											
				Raw Water								Treated	Recycled		
				Groundwater				Surface Water				Water	Water		Totals
			Alloc.	Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5	
JOB #		FY 01 thru 05	Factor	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I			
	Table II.B.2. - Allocation of Debt Funded Projects														
910904	South County Recycled Water Impv.	4,379	R-5	0	0	0	0	0	0	0	0	0	0	4,379	4,379
911504	Water Facilities Signage	190	GST	74	2	14	19	0	0	0	0	80	0	0	190
919005	Lenihan Dam Outlet Modifications	13,483	GST	5,256	112	988	1,348	22	22	5	22	5,706	0	0	13,483
923002	Almaden Valley Pipeline Cathodic Prot.	81	GST	31	1	6	8	0	0	0	0	34	0	0	81
923702	Raw Water Control System	650	GST	253	5	48	65	1	1	0	1	275	0	0	650
927201	Almaden Calero Canal Rehabilitation	4,449	GST	1,734	37	326	445	7	7	2	7	1,883	0	0	4,449
932304	Treated Water Improvement - Pen	589	T	0	0	0	0	0	0	0	0	589	0	0	589
932804	Treated Water Improvement - San T	689	T	0	0	0	0	0	0	0	0	689	0	0	689
932904	Treated Water Improvement - Rinc.	701	T	0	0	0	0	0	0	0	0	701	0	0	701
932325	Stage 1 - Pen	2,212	T	0	0	0	0	0	0	0	0	2,212	0	0	2,212
932825	Stage 1 - San T.	366	T	0	0	0	0	0	0	0	0	366	0	0	366
932925	Stage 1 - Rinc.	1,086	T	0	0	0	0	0	0	0	0	1,086	0	0	1,086
932328	Stage 2 - Pen	36,849	T	0	0	0	0	0	0	0	0	36,849	0	0	36,849
932828	Stage 2 - San T.	35,915	T	0	0	0	0	0	0	0	0	35,915	0	0	35,915
932928	Stage 2 - Rinc.	44,519	T	0	0	0	0	0	0	0	0	44,519	0	0	44,519
932319	PWTP Control Center upgrade	369	T	0	0	0	0	0	0	0	0	369	0	0	369
932320	PWTP Clearwell Mods	7	T	0	0	0	0	0	0	0	0	7	0	0	7
932331	PWTP Mechanic Repair Shop & Stor.	3,976	T	0	0	0	0	0	0	0	0	3,976	0	0	3,976
932927	RWTP Landing Overhang Repairs	131	T	0	0	0	0	0	0	0	0	131	0	0	131
934003	New Water Quality Lab.	6,873	T	0	0	0	0	0	0	0	0	6,873	0	0	6,873
941901	SCVWD/San Francisco WD Intertie	87	T	0	0	0	0	0	0	0	0	87	0	0	87
943302	Milpitas Pipeline Relocation	365	T	0	0	0	0	0	0	0	0	365	0	0	365
	Total Debt Funded Projects	157,965		7,350	157	1,382	1,885	31	31	7	31	142,711	0	4,379	157,965
	% of Total Excluding Indirect Cost			4.65%	0.10%	0.87%	1.19%	0.02%	0.02%	0.00%	0.02%	90.34%	0.00%	2.77%	100.00%
	Indirect Cost Allocation			0	0	0	0	0	0	0	0	0	0	0	0
	Total Debt Funded Projects			7,350	157	1,382	1,885	31	31	7	31	142,711	0	4,379	157,965
	% of Total		Debt	4.65%	0.10%	0.87%	1.19%	0.02%	0.02%	0.00%	0.02%	90.34%	0.00%	2.77%	100.00%
	2000-01 Debt Service	1,475	Debt	69	1	13	18	0	0	0	0	1,333	-	41	1,475

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Capital Projects

			Direct Costs											
			Raw Water								Treated	Recycled		
			Groundwater				Surface Water				Water	Water		Totals
		Alloc.	Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5	
JOB #	FY 01 thru 05	Factor	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I			
Table II.C. - Summary of Capital Allocations														
Recap														
Cash Funded Projects	3,177		1,126	24	208	284	4	4	1	4	1,522	0	0	3,177
Debt Funded Projects	1,475		69	1	13	18	0	0	0	0	1,333	-	41	1,475
Debt Service-W1 GO Bonds	2,196	Zone 2	1,038	22	0	0	4	4	0	0	1,127	0	0	2,196
1994 Revenue Refunding	8,700	GST	3,392	72	638	870	14	14	3	14	3,681	0	0	8,700
Total Capital	15,548		5,624	120	859	1,171	24	24	4	19	7,663	0	41	15,548
Total Capital Allocation Factors	100.00%	Ind-Cap	36.17%	0.77%	5.52%	7.53%	0.15%	0.15%	0.03%	0.12%	49.29%	0.00%	0.26%	100.00%

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Capital Projects

			Direct Costs											
			Raw Water								Treated	Recycled		
			Groundwater				Surface Water				Water	Water		Totals
		Alloc.	Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5	
JOB #	FY 01 thru 05	Factor	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I			
Table III - Summary of Operating and Capital Allocations														
Ind-All Allocation Factor Calculation														
Total Operations	74,498		21,858	291	3,502	3,959	128	66	33	127	44,498	-	38	74,498
Total Capital	15,548		5,624	120	859	1,171	24	24	4	19	7,663	-	41	15,548
Total Operations & Capital	90,047		27,482	411	4,361	5,130	151	89	37	146	52,161	-	79	90,047
Ind-All Allocation Factors	100.00%	Ind-All	30.52%	0.46%	4.84%	5.70%	0.17%	0.10%	0.04%	0.16%	57.93%	0.00%	0.09%	100.00%

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation of Other Revenue & Transfers to Reserves

Job	Job Description	FY 2000/01 Adjusted Budget	Alloc. Factor	Raw Water								Treated Water	Recycled Water		Indirect Costs	Totals
				Groundwater				Surface Water								
				Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-2	Zone W-5		
				M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I				
Table IV. - Allocation of Other Revenue & Transfers to Reserves																
Inter-governmental Services																
	State Water Res. Contl Bd (UST Prog)	(500,000)	G	(341,108)	(7,289)	(64,140)	(87,464)	-	-	-	-	-	-	-	-	(500,000)
	San Benito County Water District	(200,000)	CVP	(33,978)	(99)	(11,701)	(3,690)	(867)	(7)	(236)	(595)	(148,826)	-	-	-	(200,000)
	Subtotal	(700,000)		(375,086)	(7,388)	(75,841)	(91,154)	(867)	(7)	(236)	(595)	(148,826)	-	-	-	(700,000)
Property Taxes																
	Zone W-3 Tax	(263,000)	Zone 5	-	-	(107,124)	(146,079)	-	-	(545)	(2,435)	-	-	(6,817)	-	(263,000)
	Zone W-4 Tax	(2,003,000)	Zone 2	(946,873)	(20,232)	-	-	(4,046)	(4,046)	-	-	(1,027,802)	-	-	-	(2,003,000)
	Debt Service Zone W-1	(2,196,000)	Zone 2	(1,038,109)	(22,182)	-	-	(4,436)	(4,436)	-	-	(1,126,836)	-	-	-	(2,196,000)
	Gavilan Water Conservation District	(247,000)	Zone 5	-	-	(100,607)	(137,192)	-	-	(512)	(2,287)	-	-	(6,402)	-	(247,000)
	State Water Project Tax	(8,500,000)	GST	(3,313,763)	(70,807)	(623,101)	(849,683)	(14,161)	(14,161)	(3,172)	(14,161)	(3,596,990)	-	-	-	(8,500,000)
	Subtotal	(13,209,000)		(5,298,745)	(113,221)	(830,832)	(1,132,953)	(22,644)	(22,644)	(4,230)	(18,883)	(5,751,629)	-	(13,219)	-	(13,209,000)
Interest Income																
	Interest Income	(5,188,000)	Ind-All	-	-	-	-	-	-	-	-	-	-	-	(5,188,000)	(5,188,000)
Other Income																
	Other	(250,700)	Ind-All	-	-	-	-	-	-	-	-	-	-	-	(250,700)	(250,700)
	Non-contract Water	-	T	-	-	-	-	-	-	-	-	-	-	-	-	-
	Total Other Revenue	(19,347,700)		(5,673,830)	(120,609)	(906,674)	(1,224,107)	(23,511)	(22,651)	(4,466)	(19,477)	(5,900,455)	-	(13,219)	(5,438,700)	(19,347,700)
Operating Reserve Transfers																
	Working Capital Appropriation	56,000	Ind-All	-	-	-	-	-	-	-	-	-	-	-	56,000	56,000
	Supplemental Water Supply Appro.	8,608,000	GST	3,355,867	71,707	631,018	860,479	14,341	14,341	3,212	14,341	3,642,693	-	-	-	8,608,000
	Rate Stabilization Reserve Fund	500,000	Ind-All	-	-	-	-	-	-	-	-	-	-	-	500,000	500,000
	Subtotal	9,164,000		3,355,867	71,707	631,018	860,479	14,341	14,341	3,212	14,341	3,642,693	-	-	556,000	9,164,000
Capital Reserve Transfers																
	Designated for Future Years' Capital	7,029,534	Ind-Cap	2,542,710	54,331	388,219	529,389	10,625	10,625	1,931	8,619	3,464,602	-	18,484	-	7,029,534
	Construction Reserves	-	Ind-Cap													-
	Subtotal	7,029,534		2,542,710	54,331	388,219	529,389	10,625	10,625	1,931	8,619	3,464,602	-	18,484	-	7,029,534
	Total Transfers to Reserves	16,193,534		5,898,577	126,038	1,019,236	1,389,868	24,966	24,966	5,143	22,960	7,107,296	-	18,484	556,000	16,193,534
	Total Other Rev. & Trans. To Reserves	(3,154,166)		224,747	5,429	112,563	165,761	1,455	2,315	677	3,483	1,206,840	-	5,265	(4,882,700)	(3,154,166)
	Indirect Cost Allocation	-	Ind-All	(1,490,171)	(22,281)	(236,452)	(278,165)	(8,201)	(4,830)	(2,013)	(7,912)	(2,828,400)	-	(4,275)	4,882,700	-
	Total	(3,154,166)		(1,265,424)	(16,852)	(123,890)	(112,404)	(6,747)	(2,515)	(1,335)	(4,429)	(1,621,559)	-	990	-	(3,154,166)

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation Factors

	Raw Water										
	Groundwater				**Surface Water**				**Treated Water**	**Recycled Water**	**Total**
Allocation Factor	**Zone W-2**		**Zone W-5**		**Zone W-2**		**Zone W-5**			**Zone W-5**	
	M & I	**Ag**	**M & I**	**Ag**	**M & I**	**Ag**	**M & I**	**Ag**	**M & I**		
Table V.A. - Allocation Factors-Operating Expenditures											
2000-01 (AF)[3]	117,000	2,500	22,000	30,000	500	500	112	500	127,000	1,400	301,512
GST	38.99%	0.83%	7.33%	10.00%	0.17%	0.17%	0.04%	0.17%	42.32%		100.00%
R										100.00%	100.00%
R-5										100.00%	100.00%
G	68.22%	1.46%	12.83%	17.49%							100.00%
G-2	97.91%	2.09%									100.00%
G-5			42.31%	57.69%							100.00%
S					31.02%	31.02%	6.95%	31.02%			100.00%
T									100.00%		100.00%
Zone 2	47.27%	1.01%			0.20%	0.20%			51.31%		100.00%
Zone 5			40.73%	55.54%			0.21%	0.93%		2.59%	100.00%
SWP (AF)[1]	23,400	0							29,500		52,900
SWP	44.23%	0.00%							55.77%		100.00%
CVP (AF)[2]	13,600	186	4,798	6,539	332	12	112	1,196	68,741		95,516
SWP+CVP (AF)	37,000	186	4,798	6,539	332	12	112	1,196	98,241		148,416
SWP+CVP	24.93%	0.13%	3.23%	4.41%	0.22%	0.01%	0.08%	0.81%	66.19%		100.00%
CVP[4]	$ 2,044,270	$ 5,981	$ 704,018	$ 222,029	$ 52,174	$ 421	$ 14,190	$ 35,774	$ 8,954,120		$12,032,977
CVP	16.99%	0.05%	5.85%	1.85%	0.43%	0.00%	0.12%	0.30%	74.41%		100.00%

[1] Estimated.

[2] 1997-1999 Average deliveries provided by SCVWD.

[3] Source-SCVWD Rate Model.

[4] 1999 Cost provided by SCVWD.

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Allocation Factors

Table V.B. - Allocation Factors-Capital Expenditures

Allocation Factor	Raw Water								Treated Water (Contract Only)	Recycled Water	Total
	Groundwater				Surface Water						
	Zone W-2		Zone W-5		Zone W-2		Zone W-5			Zone W-5	
	M & I	Ag	M & I	Ag	M & I	Ag	M & I	AG	M & I		
2000-01 (AF)[3]	117,000	2,500	22,000	30,000	500	500	112	500	127,000	1,400	301,512
GST	38.99%	0.83%	7.33%	10.00%	0.17%	0.17%	0.04%	0.17%	42.32%		100.00%
R										100.00%	100.00%
R-5										100.00%	100.00%
G	68.22%	1.46%	12.83%	17.49%							100.00%
G-2	97.91%	2.09%									100.00%
G-5			42.31%	57.69%							100.00%
S					31.02%	31.02%	6.95%	31.02%			100.00%
T									100.00%		100.00%
Zone 2	47.27%	1.01%			0.20%	0.20%			51.31%		100.00%
Zone 5			40.73%	55.54%			0.21%	0.93%		2.59%	100.00%
SWP (AF)[1]	23,400	0							29,500		52,900
SWP	44.23%	0.00%							55.77%		100.00%
CVP (AF)[2]	13,600	186	4,798	6,539	332	12	112	1,196	68,741		95,516
SWP+CVP (AF)	64,200	557	14,393	19,618	996	36	336	3,588	235,723		339,447
SWP+CVP	18.91%	0.16%	4.24%	5.78%	0.29%	0.01%	0.10%	1.06%	69.44%		100.00%
CVP[4]	$2,044,270	$5,981	$704,018	$222,029	$52,174	$421	$14,190	$35,774	$8,954,120		$ 12,032,977
CVP	16.99%	0.05%	5.85%	1.85%	0.43%	0.00%	0.12%	0.30%	74.41%		100.00%

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[1] Estimated.
[2] 1997-1999 Average deliveries provided by SCVWD.
[3] Source-SCVWD Rate Model.
[4] 1999 Cost provided by SCVWD.

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Unit Costs

	FY 2000/01 Budget	Percent of Total	Raw Water								Treated Water	Recycled Water	Totals
			Groundwater				Surface Water						
			Zone W-2		Zone W-5		Zone W-2		Zone W-5		Zone W-2	Zone W-5	
			M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	M & I	Ag	
Pooled Cost Components													
GST	26,480,020	30.5%	10,323,354	220,584	1,941,143	2,647,014	44,117	44,117	9,882	44,117	11,205,692	-	26,480,020
CVP	10,845,585	12.5%	1,842,545	5,391	634,547	200,120	47,026	379	12,790	32,244	8,070,544	-	10,845,585
SWP	11,000,000	12.7%	4,865,784	-	-	-	-	-	-	-	6,134,216	-	11,000,000
SWP+CVP	1,894,067	2.2%	472,191	2,369	61,227	83,454	4,237	153	1,429	15,263	1,253,743	-	1,894,067
Zone 2	(1,673,898)	-1.9%	(791,297)	(16,908)	-	-	(3,382)	(3,382)	-	-	(858,929)	-	(1,673,898)
Zone 5	(3,901)	0.0%	-	-	(1,589)	(2,167)	-	-	(8)	(36)	-	(101)	(3,901)
Subtotal-Direct Pooled Cost	48,541,873	55.9%	16,712,577	211,437	2,635,329	2,928,421	91,998	41,268	24,093	91,588	25,805,264	(101)	48,541,873
Ind-Op	11,027,749	12.7%	3,241,773	42,704	491,580	547,317	19,027	9,660	4,766	18,293	6,648,786	3,842	11,027,749
Ind-SOS	952,264	1.1%	351,028	4,059	50,733	53,242	2,338	1,124	589	2,243	486,424	483	952,264
Ind-A&G	-	0.0%	-	-	-	-	-	-	-	-	-	-	-
Ind-RWTD	1,486,423	1.7%	770,939	16,473	142,383	194,158	1,409	1,409	303	1,351	357,998	-	1,486,423
Ind-All	(4,882,700)	-5.6%	(1,490,171)	(22,281)	(236,452)	(278,165)	(8,201)	(4,830)	(2,013)	(7,912)	(2,828,400)	(4,275)	(4,882,700)
Ind-Cap	7,029,534	8.1%	2,542,710	54,331	388,219	529,389	10,625	10,625	1,931	8,619	3,464,602	18,484	7,029,534
Subtotal-Indir. Pooled Cost	15,613,270	18.0%	5,416,280	95,285	836,462	1,045,942	25,199	17,988	5,575	22,594	8,129,411	18,534	15,613,270
Total Pooled Cost	64,155,143	73.8%	22,128,856	306,722	3,471,791	3,974,363	117,196	59,256	29,669	114,182	33,934,675	18,433	64,155,143
	100.0%		34.5%	0.5%	5.4%	6.2%	0.2%	0.1%	0.0%	0.2%	52.9%	0.0%	
Specific Cost Components													
G	5,963,324	6.9%	4,068,273	86,929	764,974	1,043,147	-	-	-	-	-	-	5,963,324
G-2	19,584	0.0%	19,174	410	-	-	-	-	-	-	-	-	19,584
G-5	-	0.0%	-	-	-	-	-	-	-	-	-	-	-
S	88,022	0.1%	-	-	-	-	27,302	27,302	6,116	27,302	-	-	88,022
T	16,605,101	19.1%	-	-	-	-	-	-	-	-	16,605,101	-	16,605,101
R	-	0.0%	-	-	-	-	-	-	-	-	-	-	-
R-5	61,397	0.1%	-	-	-	-	-	-	-	-	-	61,397	61,397
Subtotal-Specific Cost Comp	22,737,428	26.2%	4,087,448	87,339	764,974	1,043,147	27,302	27,302	6,116	27,302	16,605,101	61,397	22,737,428
	100.0%		18.0%	0.4%	3.4%	4.6%	0.1%	0.1%	0.0%	0.1%	73.0%	0.3%	
Net Revenue Requirement	86,892,571	100.0%	26,216,304	394,061	4,236,765	5,017,510	144,499	86,558	35,784	141,484	50,539,776	79,830	86,892,571
	100.0%		30.2%	0.5%	4.9%	5.8%	0.2%	0.1%	0.0%	0.2%	58.2%	0.1%	
Subtotals													
M & I	81,173,128	93.4%	26,216,304		4,236,765		144,499		35,784		50,539,776		
Ag	5,719,443	6.6%		394,061		5,017,510		86,558		141,484		79,830	
Zone W-2	77,381,197	89.1%	26,216,304	394,061			144,499	86,558			50,539,776		
Zone W-5	9,511,374	10.9%			4,236,765	5,017,510			35,784	141,484		79,830	

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)
Table VI.C. - Comparison of Unit Costs and Existing Revenue

	Existing Rates ($/AF)			Cost Allocation Models - Unit Costs in $/AF							
				Unpooled Cost Model			Pooled Cost Model				
					Difference*					Difference*	
Service	Basic User Charge	Surcharges	Total	Unit Cost	$	%	Pooled Cost	Specific Cost	Unit Cost	$	%
1. Groundwater											
Zone W-2											
M&I	$ 310.00	$ -	$ 310.00	$ 224.07	$ (85.93)	-27.7%	$ 212.60	$ 34.94	$ 247.53	$ (62.47)	-20.2%
Ag	$ 31.00	$ -	$ 31.00	$ 157.62	$ 126.62	408.5%	$ 212.60	$ 34.94	$ 247.53	$ 216.53	698.5%
Zone W-5											
M&I	$ 115.00	$ -	$ 115.00	$ 192.58	$ 77.58	67.5%	$ 219.29	$ 34.77	$ 254.06	$ 139.06	120.9%
Ag	$ 11.50	$ -	$ 11.50	$ 167.25	$ 155.75	1354.4%	$ 219.29	$ 34.77	$ 254.06	$ 242.56	2109.2%
2. Surface Water											
Zone W-2											
M&I	$ 310.00	$ 11.75	$ 321.75	$ 289.00	$ (32.75)	-10.2%	$ 212.60	$ 54.60	$ 267.20	$ (54.55)	-17.0%
Ag	$ 31.00	$ 11.75	$ 42.75	$ 173.12	$ 130.37	305.0%	$ 212.60	$ 54.60	$ 267.20	$ 224.45	525.0%
Zone W-5											
M&I	$ 115.00	$ 11.75	$ 126.75	$ 319.50	$ 192.75	152.1%	$ 219.29	$ 54.60	$ 273.89	$ 147.14	116.1%
Ag	$ 11.50	$ 11.75	$ 23.25	$ 282.97	$ 259.72	1117.1%	$ 219.29	$ 54.60	$ 273.89	$ 250.64	1078.0%
3. Treated Water											
Contract	$ 310.00	$ 70.00	$ 380.00	$ 397.95	$ 17.95	4.7%	$ 212.60	$ 130.75	$ 343.35	$ (36.65)	-9.6%
Non-contract	$ 310.00	$ -	$ 310.00	$ 397.95	$ 87.95	28.4%	$ 212.60	$ 130.75	$ 343.35	$ 33.35	10.8%
4. Recycled Water											
Zone W-5											
M&I	$ 80.00		$ 80.00	$ 57.02	$ (22.98)	-28.7%	$ (0.07)	$ 43.86	$ 43.78	$ (36.22)	-45.3%
Ag	$ 20.00		$ 20.00	$ 57.02	$ 37.02	185.1%	$ (0.07)	$ 43.86	$ 43.78	$ 23.78	118.9%

*Differences compare modeled unit costs with existing rates.

	Revenue From Existing Rates			Cost Allocation Models - Revenue Requirements							
				Unpooled Cost Model			Pooled Cost Model				
					Difference*					Difference*	
Service	Basic User Charge	Surcharges	Total	Total Cost	$	%	Pooled Cost	Specific Cost	Total Cost	$	%
1. Groundwater											
Zone W-2											
M&I	$36,270,000	$ -	$36,270,000	$26,216,304	$(10,053,696)	-27.7%	$24,873,968	$ 4,087,448	$28,961,416	$(7,308,584)	-20.2%
Ag	$ 77,500	$ -	$ 77,500	$ 394,061	$ 316,561	408.5%	$ 531,495	$ 87,339	$ 618,834	$ 541,334	698.5%
Zone W-5											
M&I	$ 2,530,000	$ -	$ 2,530,000	$ 4,236,765	$ 1,706,765	67.5%	$ 4,824,358	$ 764,974	$ 5,589,333	$ 3,059,333	120.9%
Ag	$ 345,000	$ -	$ 345,000	$ 5,017,510	$ 4,672,510	1354.4%	$ 6,578,671	$ 1,043,147	$ 7,621,818	$ 7,276,818	2109.2%
Subtotal	$39,222,500	$ -	$39,222,500	$35,864,639	$ (3,357,861)	-8.6%	$36,808,492	$ 5,982,908	$42,791,400	$ 3,568,900	9.1%
2. Surface Water											
Zone W-2											
M&I	$ 155,000	$ 5,875	$ 160,875	$ 144,499	$ (16,376)	-10.2%	$ 106,299	$ 27,302	$ 133,601	$ (27,274)	-17.0%
Ag	$ 15,500	$ 5,875	$ 21,375	$ 86,558	$ 65,183	305.0%	$ 106,299	$ 27,302	$ 133,601	$ 112,226	525.0%
Zone W-5											
M&I	$ 12,880	$ 1,316	$ 14,196	$ 35,784	$ 21,588	152.1%	$ 24,560	$ 6,116	$ 30,676	$ 16,480	116.1%
Ag	$ 5,750	$ 5,875	$ 11,625	$ 141,484	$ 129,859	1117.1%	$ 109,645	$ 27,302	$ 136,947	$ 125,322	1078.0%
Subtotal	$ 189,130	$ 18,941	$ 208,071	$ 408,325	$ 200,254	96.2%	$ 346,803	$ 88,022	$ 434,825	$ 226,754	109.0%
3. Treated Water											
Contract	$35,340,000	$7,980,000	$43,320,000	$45,366,413	$ 2,046,413	4.7%	$24,236,174	$14,905,366	$39,141,541	$(4,178,459)	-9.6%
Non-contract	$ 4,030,000	$ -	$ 4,030,000	$ 5,173,363	$ 1,143,363	28.4%	$ 2,763,774	$ 1,699,735	$ 4,463,509	$ 433,509	10.8%
Subtotal	$39,370,000	$7,980,000	$47,350,000	$50,539,776	$ 3,189,776	6.7%	$26,999,949	$16,605,101	$43,605,050	$(3,744,950)	-7.9%
4. Recycled Water											
Zone W-5											
M&I	$ -	$ -	$ -	$ -	$ -	0.0%	$ -	$ -	$ -	$ -	0.0%
Ag	$ 112,000	$ -	$ 112,000	$ 79,830	$ (32,170)	-28.7%	$ (101)	$ 61,397	$ 61,296	$ (50,704)	-45.3%
Subtotal	$ 112,000	$ -	$ 112,000	$ 79,830	$ (32,170)	-28.7%	$ (101)	$ 61,397	$ 61,296	$ (50,704)	-45.3%
Total	$78,893,630	$7,998,941	$86,892,571	$86,892,571	$ -		$64,155,143	$22,737,428	$86,892,571		
	90.8%	9.2%	100.0%				73.8%	26.2%	100.0%		

*Differences compare modeled costs with existing rate revenue.

Santa Clara Valley Water District
Water Enterprise Fund (Fund 61)

	Allocated Cost as a Percent of Total		
Service	**Existing Rates**	**Unpooled Cost Model**	**Pooled Cost Model**
1. Groundwater			
Zone W-2			
M&I	41.74%	30.17%	33.33%
Ag	0.09%	0.45%	0.71%
Zone W-5			
M&I	2.91%	4.88%	6.43%
Ag	0.40%	5.77%	8.77%
Subtotal	45.14%	41.27%	49.25%
2. Surface Water			
Zone W-2			
M&I	0.19%	0.17%	0.15%
Ag	0.02%	0.10%	0.15%
Zone W-5			
M&I	0.02%	0.04%	0.04%
Ag	0.01%	0.16%	0.16%
Subtotal	0.24%	0.47%	0.50%
3. Treated Water			
Contract	49.85%	52.21%	45.05%
Non-contract	4.64%	5.95%	5.14%
Subtotal	54.49%	58.16%	50.18%
4. Recycled Water			
Zone W-5			
M&I	0.00%	0.00%	0.00%
Ag	0.13%	0.09%	0.07%
Subtotal	0.13%	0.09%	0.07%
Total	100.00%	100.00%	100.00%